

Service Manual



DEH-1550/XU/ES

ORDER NO.
CRT2970

HIGH POWER CD PLAYER WITH FM/AM TUNER

DEH-1550 XU/ES

DEH-1550B XU/ES



● This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech. Module	Remarks
CX-3026	CRT2944	S10	CD Mech. Module:Circuit Description, Mech.Description, Disassembly



For details, refer to "Important symbols for good services".

PIONEER CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER EUROPE NV Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 253 Alexandra Road, #04-01, Singapore 159936

SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

[Important symbols for good services]

In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely. When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety



You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments



To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning



For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws



To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts



Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount. For replacement parts or tools, the prescribed ones should be used.

CONTENTS

SAFETY INFORMATION	2
1. SPECIFICATIONS	4
2. EXPLODED VIEWS AND PARTS LIST	5
2.1 PACKING	5
2.2 EXTERIOR	6
2.3 CD MECHANISM MODULE	8
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM	10
3.1 BLOCK DIAGRAM	10
3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)	12
3.3 KEYBOARD UNIT	18
3.4 CD MECHANISM MODULE	20
4. PCB CONNECTION DIAGRAM	24
4.1 TUNER AMP UNIT	24
4.2 KEYBOARD UNIT	28
4.3 CD MECHANISM MODULE	30
5. ELECTRICAL PARTS LIST	32
6. ADJUSTMENT	35
6.1 CD ADJUSTMENT	35
6.2 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT	36
6.3 ERROR MODE	38
7. GENERAL INFORMATION	39
7.1 DIAGNOSIS	39
7.1.1 DISASSEMBLY	39
7.1.2 CONNECTOR FUNCTION DESCRIPTION	44
7.2 PARTS	45
7.2.1 IC	45
7.2.2 DISPLAY	52
7.3 OPERATIONAL FLOW CHART	53
7.4 CLEANING	54
8. OPERATIONS	55

● CD Player Service Precautions



- Before disassembling the unit, be sure to turn off the power. Unplugging and plugging the connectors during power-on mode may damage the ICs inside the unit.
- To protect the pickup unit from electrostatic discharge during servicing, take an appropriate treatment(shorting-solder) by referring to "the DISASSEMBLY" on page 39.
- After replacing the pickup unit, be sure to check the grating.(See p.36.)
- In this product, because the memory capacity of the microcomputer is insufficient, the test mode is not installed. However grating of the pickup unit can be confirmed.

1. SPECIFICATIONS

General

Rated power source	14.4 V DC
(allowable voltage range: 12.0 – 14.4 V DC)	
Grounding system	Negative type
Max. current consumption	10.0 A
Backup current	Less than 5mA
Dimensions (W x H x D):	
DIN	
Chassis	178 x 50 x 157 mm
Nose	188 x 58 x 19 mm
D	
Chassis	178 x 50 x 162 mm
Nose	170 x 48 x 14 mm
Weight	1.3 kg

Audio

Continuous power output is 22 W per channel minimum into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5% THD.

Maximum power output	50 W x 4
Load impedance	4 Ω (4 – 8 Ω allowable)
Preout max output level/output impedance	2.2 V/1 k Ω

Equalizer (3-Band Parametric Equalizer):

Low	
Frequency	40/80/100/160 Hz
Q Factor	0.35/0.59/0.95/1.15 (+6 dB when boosted)
Gain	± 12 dB
Mid	
Frequency	200/500/1k/2k Hz
Q Factor	0.35/0.59/0.95/1.15 (+6 dB when boosted)
Gain	± 12 dB
High	
Frequency	3.15k/8k/10k/12.5k Hz
Q Factor	0.35/0.59/0.95/1.15 (+6 dB when boosted)
Gain	± 12 dB

Loudness contour

Low	+3.5 dB (100 Hz), +3 dB (10 kHz)
Mid	+10 dB (100 Hz), +6.5 dB (10 kHz)
High	+11 dB (100 Hz), +11 dB (10 kHz) (volume: -30 dB)

CD player

System	Compact disc audio system
Usable discs	Compact disc
Signal format:	
Sampling frequency	44.1 kHz
Number of quantization bits	16; linear
Frequency characteristics	5 – 20,000 Hz (± 1 dB)
Signal-to-noise ratio	94 dB (1 kHz) (IEC-A network)
Dynamic range	92 dB (1 kHz)
Number of channels	2 (stereo)

FM tuner

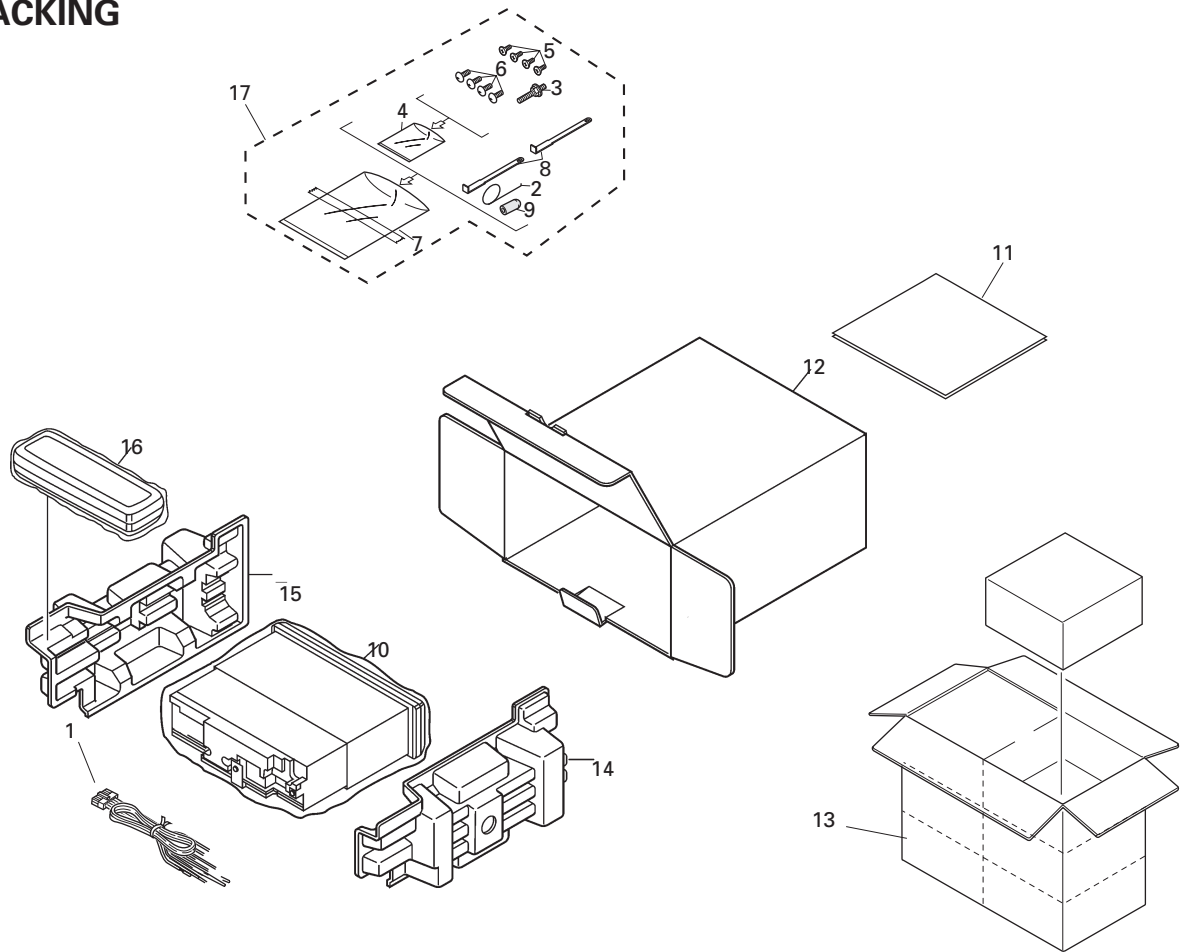
Frequency range	87.5 – 108.0 MHz
Usable sensitivity	8 dBf (0.7 μ V/75 Ω , mono, S/N: 30 dB)
50 dB quieting sensitivity	10 dBf (0.9 μ V/75 Ω , mono)
Signal-to-noise ratio	75 dB (IEC-A network)
Distortion	0.3 % (at 65 dBf, 1 kHz, stereo)
	0.1 % (at 65 dBf, 1 kHz, mono)
Frequency response	30 – 15,000 Hz (± 3 dB)
Stereo separation	45 dB (at 65 dBf, 1 kHz)

AM tuner

Frequency range	531 – 1,602 kHz (9 kHz)
	530 – 1,640 kHz (10 kHz)
Usable sensitivity	18 μ V (S/N: 20 dB)
Signal-to-noise ratio	65 dB (IEC-A network)

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING



NOTE:

- Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ▽ mark on the product are used for disassembly.
- For the applying amount of lubricants or glue, follow the instructions in this manual.
(In the case of no amount instructions, apply as you think it appropriate.)

● PACKING SECTION PARTS LIST

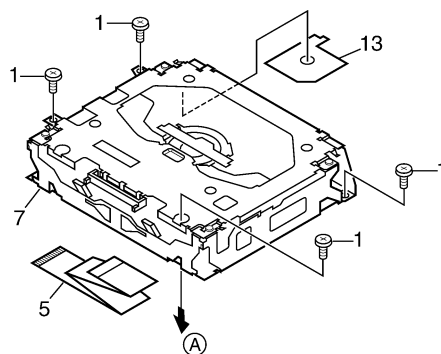
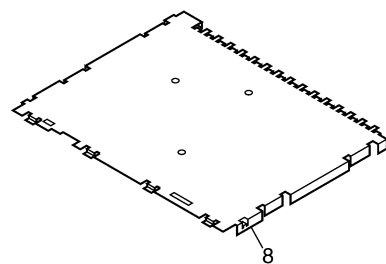
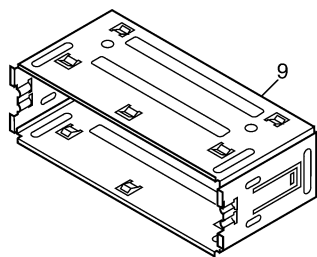
Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Cord Assy	CDE7060	11-2	Installation Manual	CRD3668
2	Spring	CBH1650	12	Carton(DEH-1550)	CHG4991
3	Screw	CBA1002		Carton(DEH-1550B)	CHG4992
*	4 Polyethylene Bag	CEG-127	13	Contain Box(DEH-1550)	CHL4991
5	Screw	CRZ50P090FTC		Contain Box(DEH-1550B)	CHL4992
6	Screw	TRZ50P080FTC	14	Protector	CHP2663
*	7 Polyethylene Bag	CEG-158	15	Protector	CHP2664
8	Handle	CNC5395	16	Case Assy	CXB3520
9	Bush	CNV3930	17	Accessory Assy	CEA3439
10	Polyethylene Bag	CEG-162			
11-1	Owner's Manual	CRD3668			

● Owner's Manual, Installation Manual

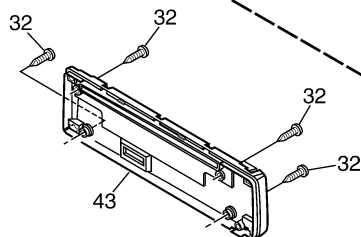
Model	Part No.	Language
DEH-1550/XU/ES	CRD3668	English,Spanish,Portuguese(B),
DEH-1550B/XU/ES	CRD3669	Arabic,Traditional chinese

2.2 EXTERIOR

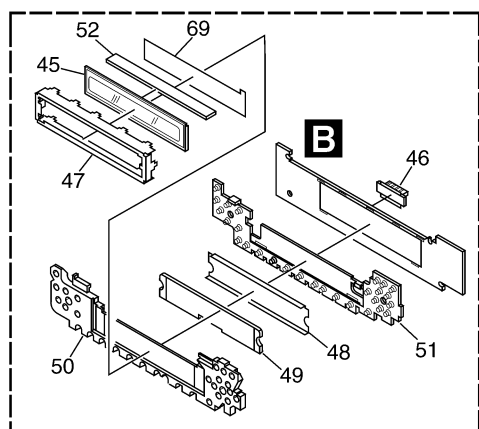
A



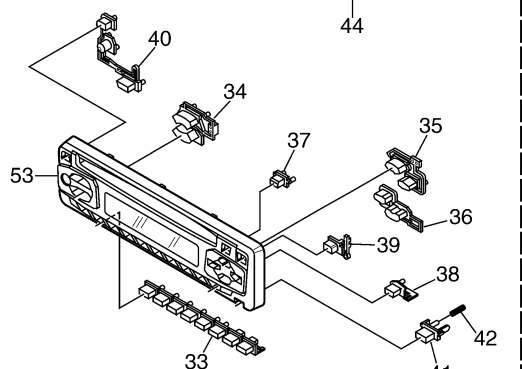
B



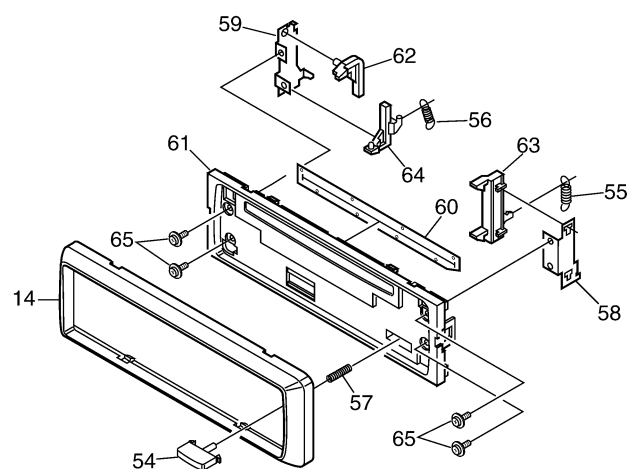
C



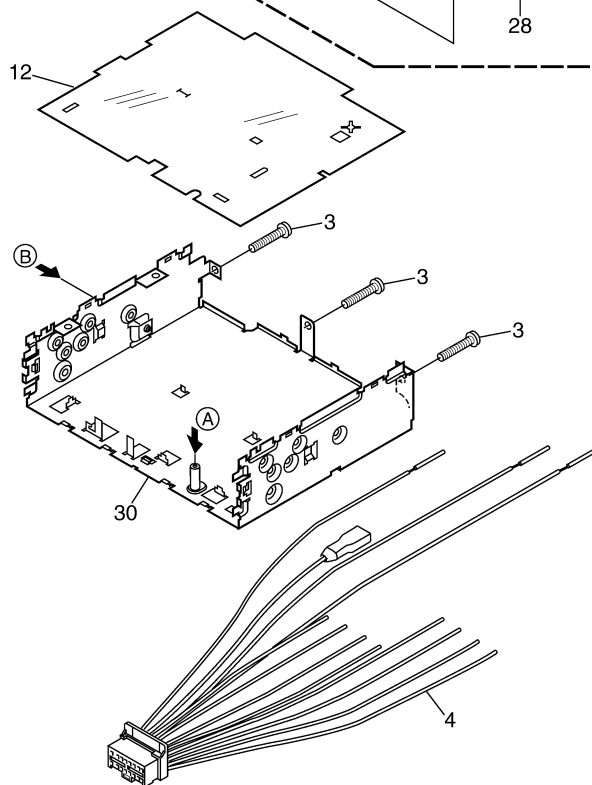
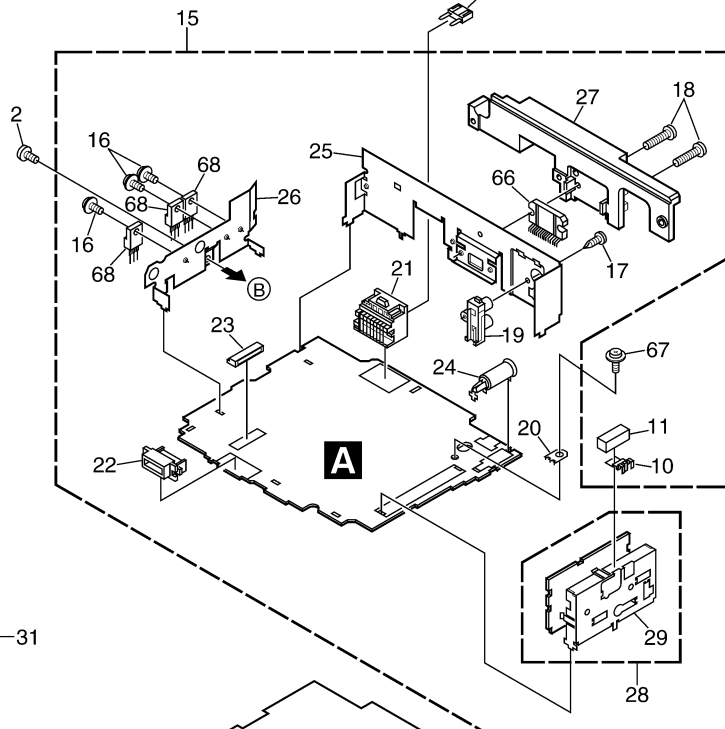
D



E



F



● EXTERIOR SECTION PARTS LIST

Mark No.	Description	Part No.
1	Screw	BSZ26P060FTC
2	Screw	BSZ30P060FTC
3	Screw	BSZ30P200FTC
4	Cord Assy	CDE7060
5	Cable	CDE7113
6	Fuse(10A)	CEK1208
7	CD Mechanism Module(S10)	CXK5600
8	Case	CNB2793
9	Holder	CNC8659
10	Earth Plate	CNC8915
11	Cushion	CNM8275
12	Insulator	CNM8059
13	Insulator	CNM8174
14	Panel	CNS7239
15	Tuner Amp Unit(DEH-1550)	CWM8570
	Tuner Amp Unit(DEH-1550B)	CWM8571
16	Screw	ASZ26P060FTC
17	Screw	BPZ26P080FTC
18	Screw	BSZ26P160FTC
19	Pin Jack(CN352)	CKB1028
20	Terminal(CN402)	CKF1059
21	Plug(CN901)	CKM1376
22	Connector(CN831)	CKS3581
23	Connector(CN651)	CKS3835
24	Antenna Jack(CN401)	CKX1056
25	Holder	CND1241
26	Holder	CND1328
27	Heat Sink	CNR1668
28	FM/AM Tuner Unit	CWE1646
29	Holder	CND1054
30	Chassis Unit	CXB9542
31	Detach Grille Assy(DEH-1550)	CXB9573
	Detach Grille Assy(DEH-1550B)	CXB9574
32	Screw	BPZ20P100FZK
33	Button(1-6)	CAC7739
34	Button(Volume)	CAC7740
35	Button(Up)	CAC7741
36	Button(Down)	CAC7742
37	Button(Eject)	CAC7743
38	Button(Band)	CAC7745
39	Button(Audio)	CAC7746
40	Button(SRC-EQ)	CAC7749
41	Button(Detach)	CAC7753
42	Spring	CBH2210
43	Cover	CNS7232
44	Keyboard Unit(DEH-1550)	CWM8578
	Keyboard Unit(DEH-1550B)	CWM8579
45	LCD(LCD1801)(DEH-1550)	CAW1733

Mark No.	Description	Part No.
	LCD(LCD1801)(DEH-1550B)	CAW1734
46	Connector(CN1801)	CKS3580
47	Holder	CNC9617
48	Sheet	CNM7932
49	Lens	CNV7060
50	Lighting Conductor	CNV7367
51	Rubber	CNV7368
52	Connector	CNV7369
53	Grille Unit(DEH-1550)	CXB9505
	Grille Unit(DEH-1550)	CXB9806
54	Button	CAC4836
55	Spring	CBH1835
56	Spring	CBH2208
57	Spring	CBH2367
58	Bracket	CNC6791
59	Holder	CNC8042
60	Cover	CNM6276
61	Panel	CNS7238
62	Arm	CNV4692
63	Arm	CNV4728
64	Arm	CNV5576
65	Screw	IMS20P030FZK
66	IC(IC302)	PAL007A
67	Screw	ISS26P055FTC
68	Transistor(Q911,921,991)	2SD1275
69	Sheet(DEH-1550B)	CNM7881

2.3 CD MECHANISM MODULE

A

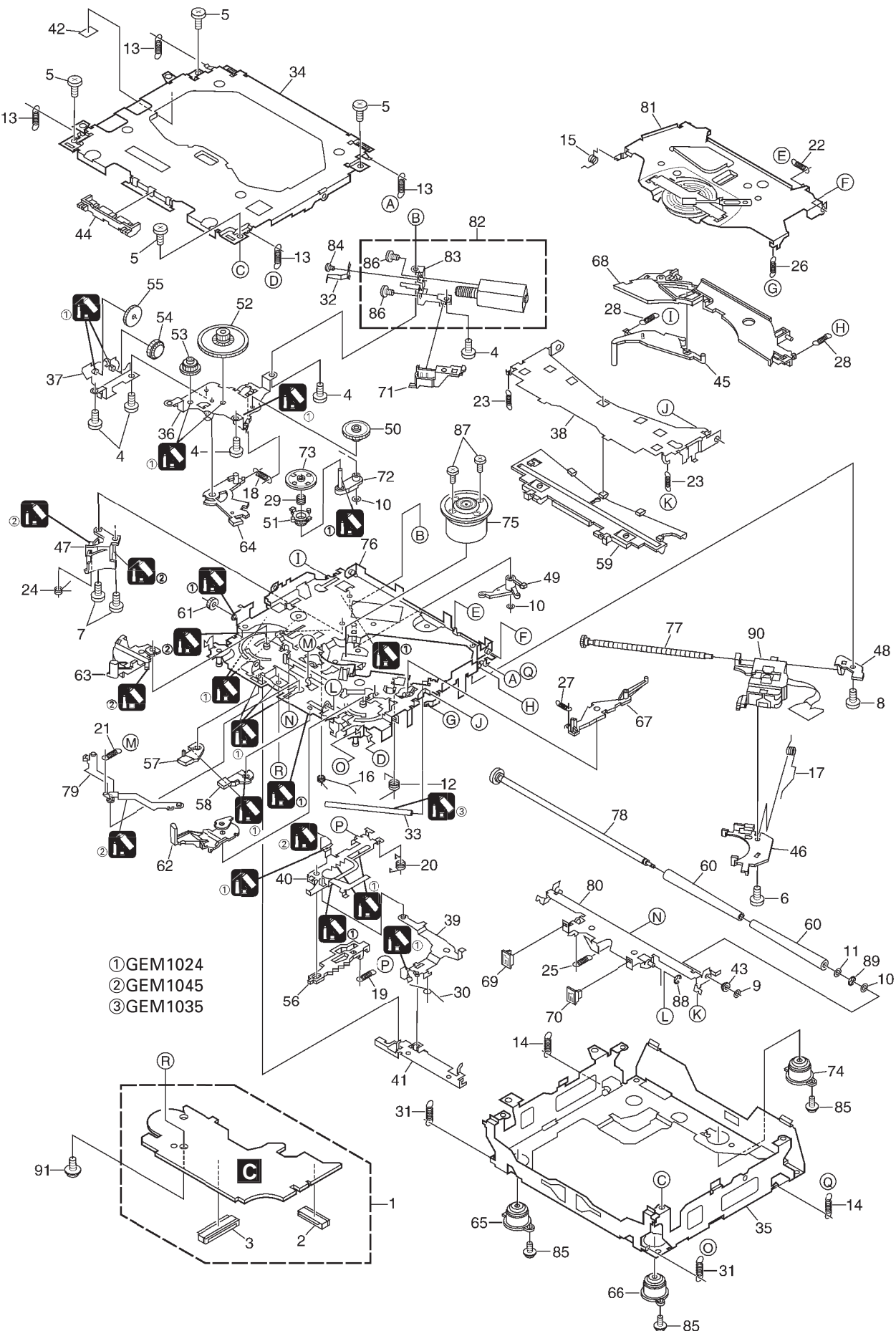
B

C

D

E

F



● CD MECHANISM MODULE SECTION PARTS LIST

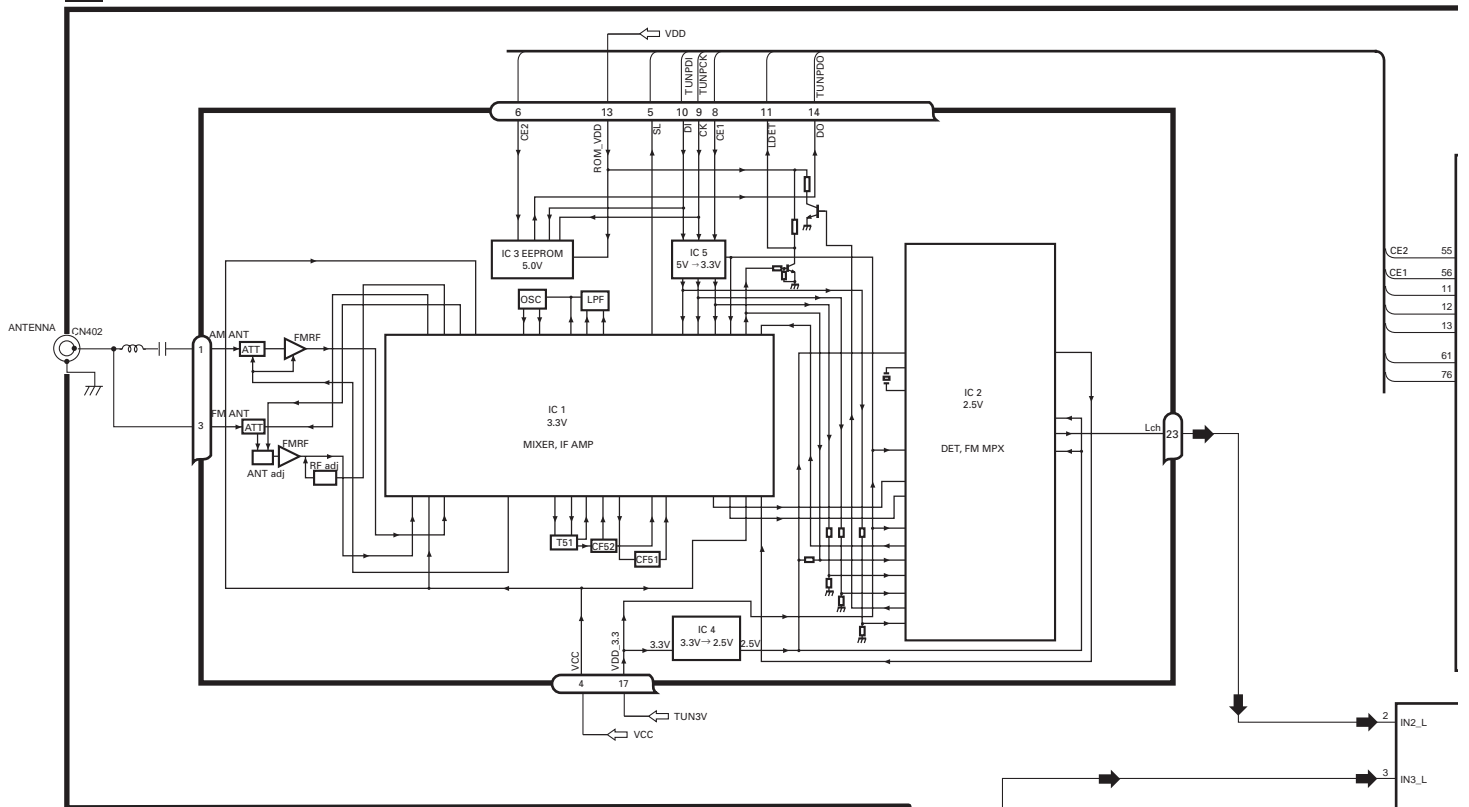
Mark No.	Description	Part No.	Mark No.	Description	Part No.	
1	CD Core Unit(S10)	CWX2708	48	Holder	CNV7202	
2	Connector(CN101)	CKS4182	49	Arm	CNV7203	
3	Connector(CN701)	CKS4188	50	Gear	CNV7207	
4	Screw	BMZ20P035FTC				
5	Screw	BSZ20P040FTC	51	Gear	CNV7208	
			52	Gear	CNV7209	
6	Screw(M2x4)	CBA1362	53	Gear	CNV7210	
7	Screw(M2x3)	CBA1511	54	Gear	CNV7211	
8	Screw(M2x3)	CBA1527	55	Gear	CNV7212	B
9	Washer	CBF1037				
10	Washer	CBF1038	56	Rack	CNV7214	
			57	Arm	CNV7215	
11	Washer	CBF1060	58	Arm	CNV7216	
12	Spring	CBH2390	59	Guide	CNV7217	
13	Spring	CBH2606	60	Roller	CNV7218	
14	Spring	CBH2607				
15	Spring	CBH2608	61	Gear	CNV7219	
			62	Arm	CNV7221	
16	Spring	CBH2609	63	Arm	CNV7220	
17	Spring	CBH2610	64	Arm	CNV7222	
18	Spring	CBH2611	65	Damper	CNV7313	C
19	Spring	CBH2612				
20	Spring	CBH2613	66	Damper	CNV7314	
			67	Arm	CNV7341	
21	Spring	CBH2614	68	Arm	CNV7342	
22	Spring	CBH2615	69	Guide	CNV7360	
23	Spring	CBH2616	70	Guide	CNV7361	
24	Spring	CBH2617				
25	Spring	CBH2620	71	Holder	CNV7437	
			72	Arm	CNV7444	
26	Spring	CBH2621	73	Gear	CNV7595	
27	Spring	CBH2641	74	Damper	CNV7618	D
28	Spring	CBH2642	75	Motor Unit(M1)	CXB6007	
29	Spring	CBH2643				
30	Spring	CBH2659	76	Chassis Unit	CXB8728	
			77	Screw Unit	CXB8729	
* 31	Spring	CBH2688	78	Gear Unit	CXB8731	
32	Spring	CBL1614	79	Arm Unit	CXB8732	
33	Shaft	CLA3845	80	Arm Unit	CXB8735	
34	Frame	CNC9962				
35	Frame	CNC9963	81	Arm Unit	CXB8852	
			82	Motor Unit(M2)	CXB8933	
36	Bracket	CNC9966	83	Bracket	CNC9985	
37	Bracket	CNC9967	84	Screw	JFZ20P020FTC	E
38	Arm	CNC9968	85	Screw(M2x5)	EBA1028	
39	Arm	CNC9973				
40	Lever	CNC9983	86	Screw	JFZ20P020FTC	
			87	Screw	JGZ17P022FTC	
41	Lever	CNC9984	88	Washer	YE15FTC	
42	Sheet	CNM8134	89	Washer	YE20FTC	
43	Collar	CNV6906	90	Pickup Unit(Service)(P10)	CXX1641	
44	Guide	CNV6925				
45	Arm	CNV7198	91	Screw	IMS26P030FMC	
46	Rack	CNV7199				F
47	Holder	CNV7201				

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

A

A TUNER AMP UNIT

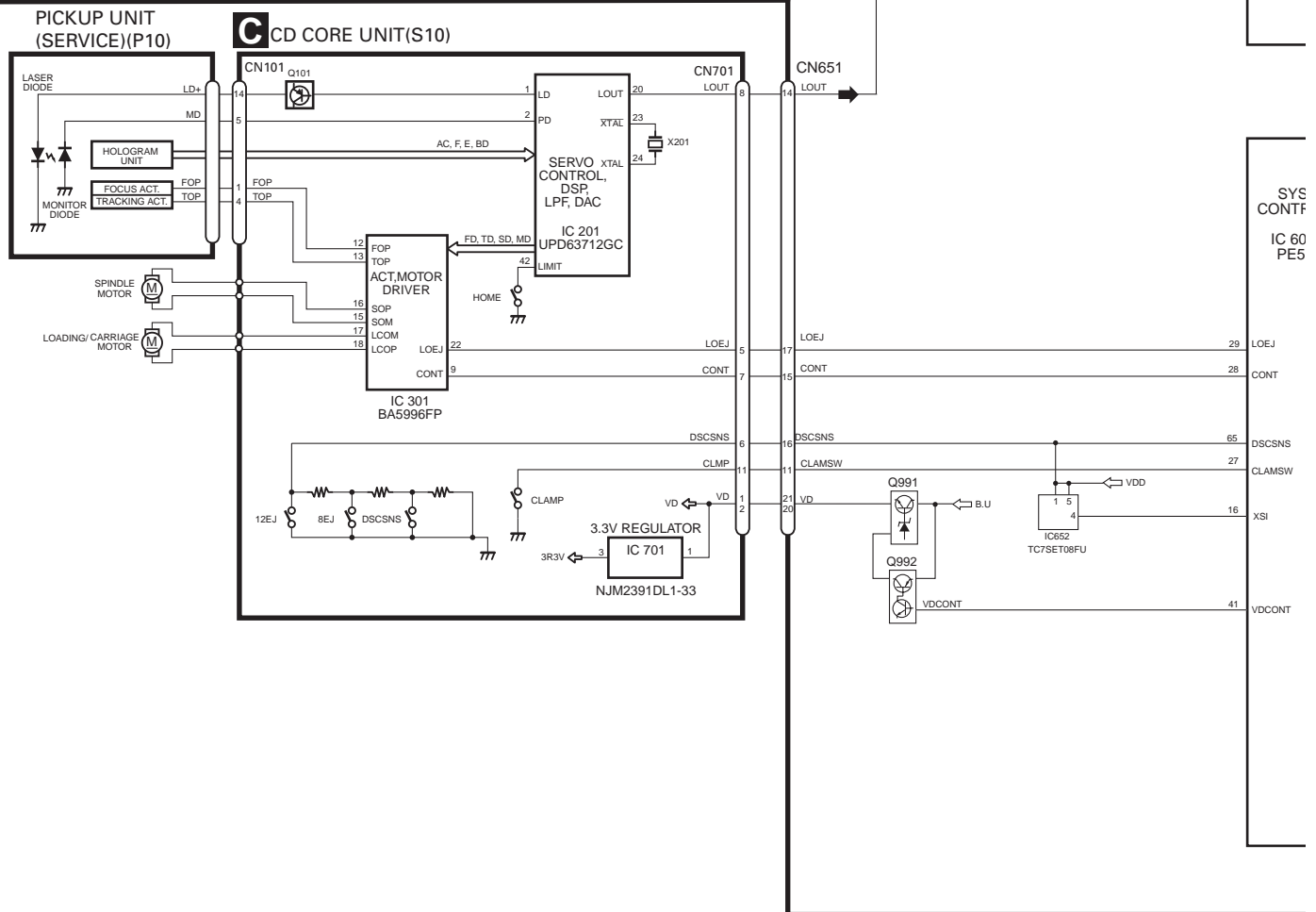


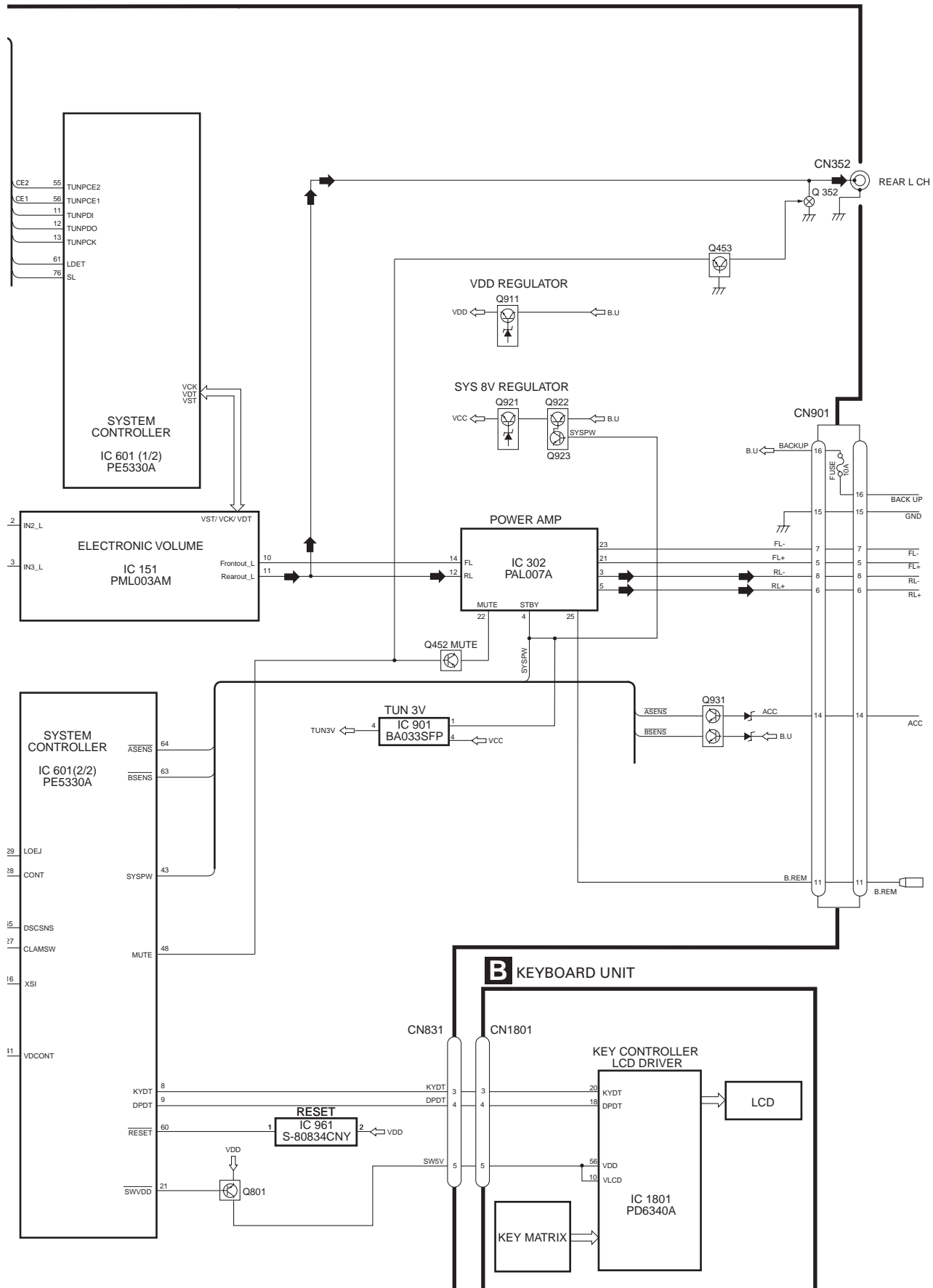
C

D

E

F

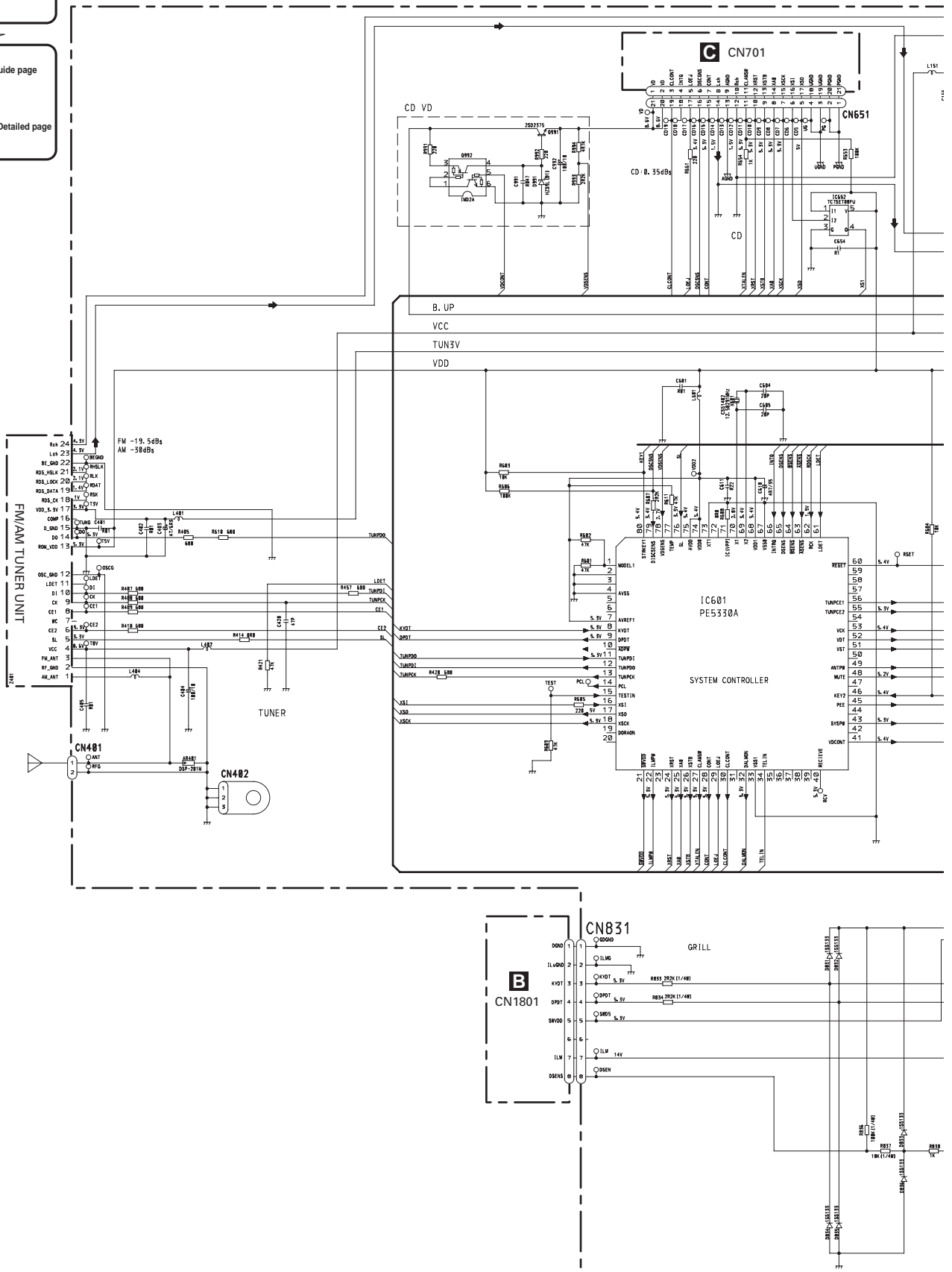
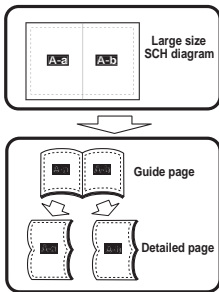




3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".

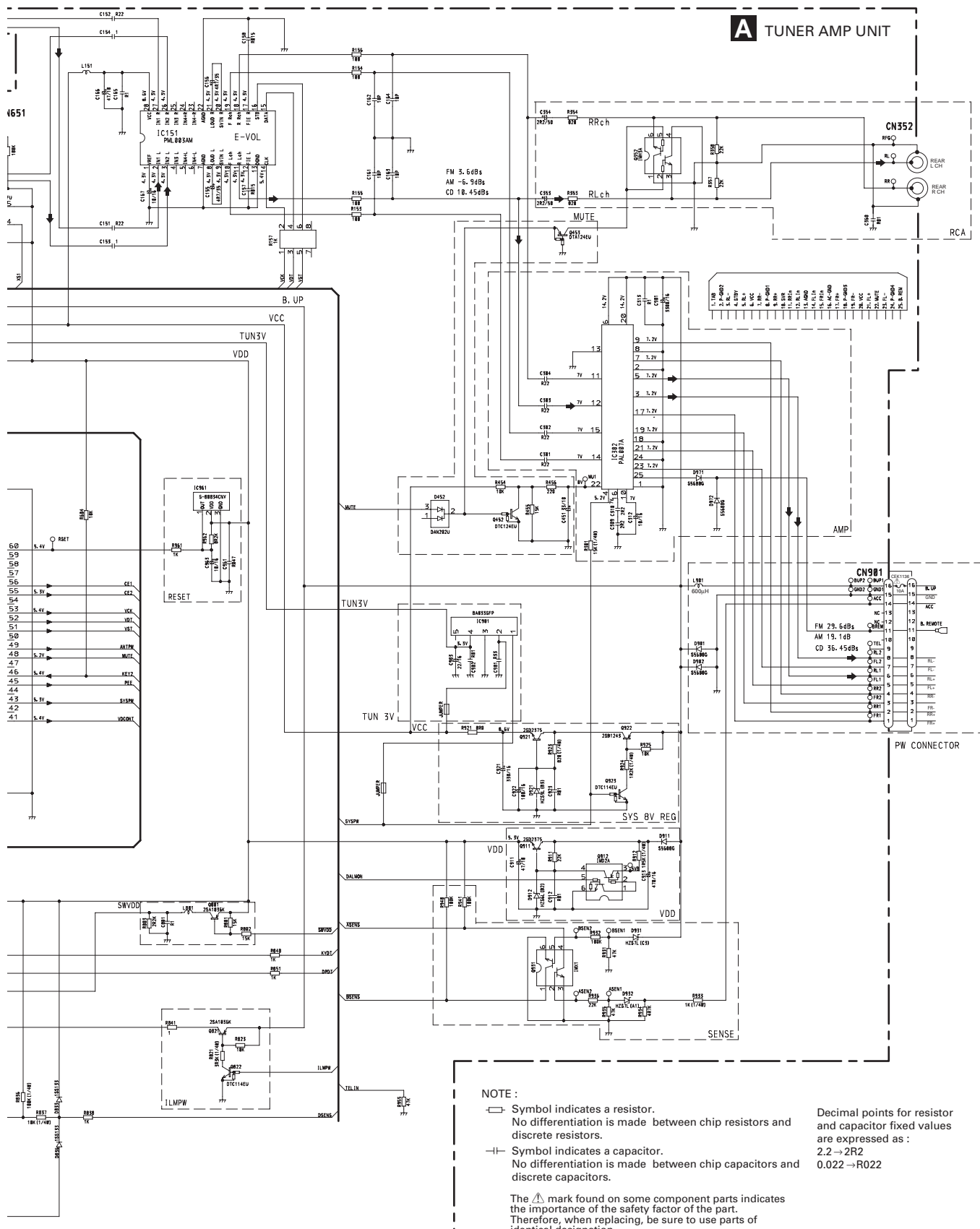
A-a



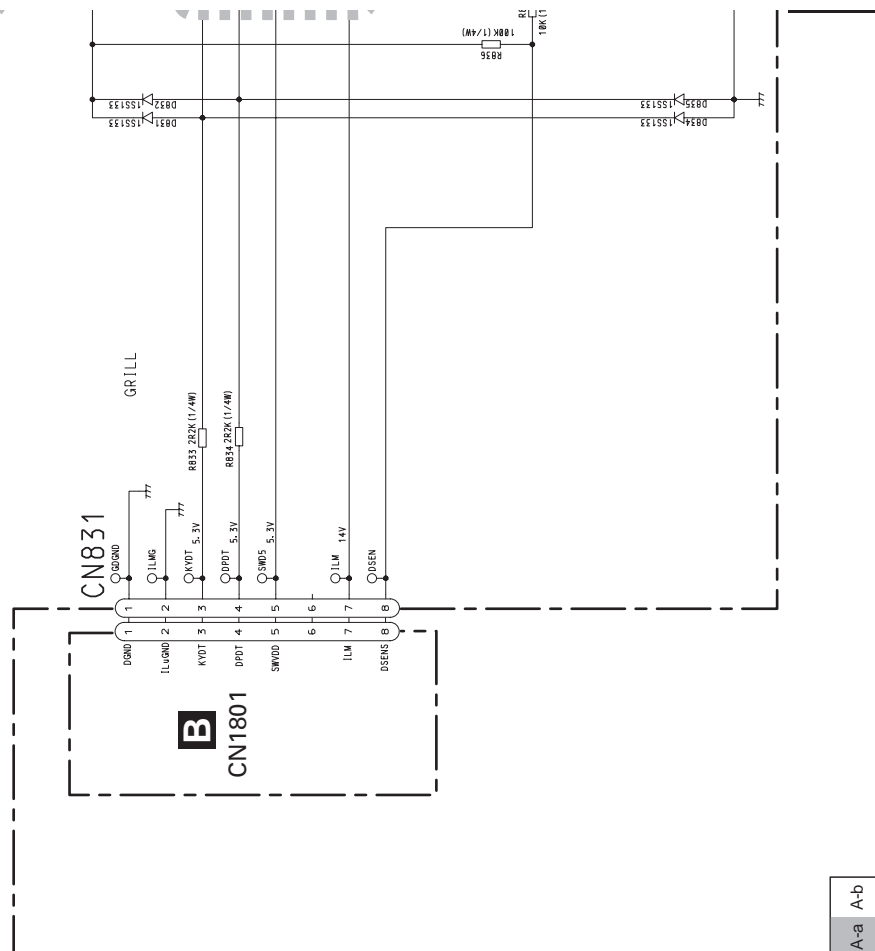
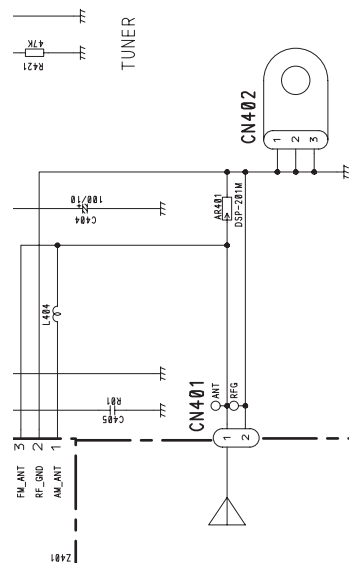
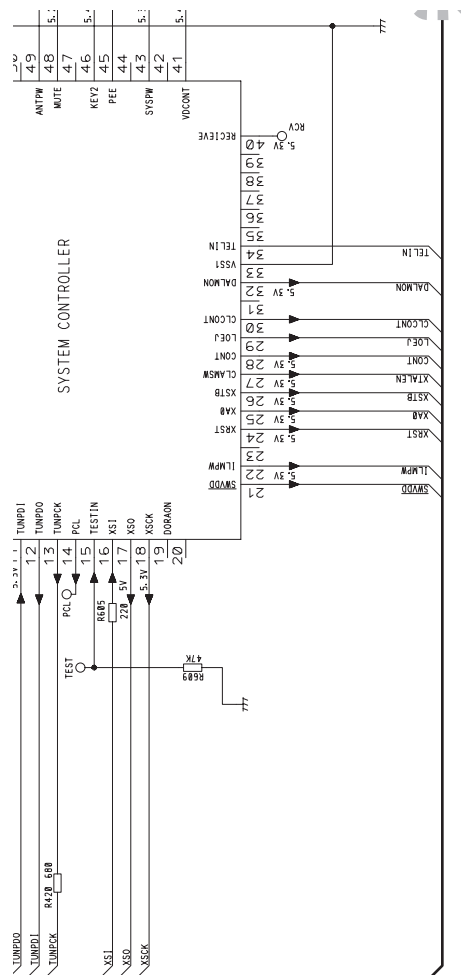
A

A-b

A TUNER AMP UNIT







A-a	A-b
-----	-----

A-a

A

B

C

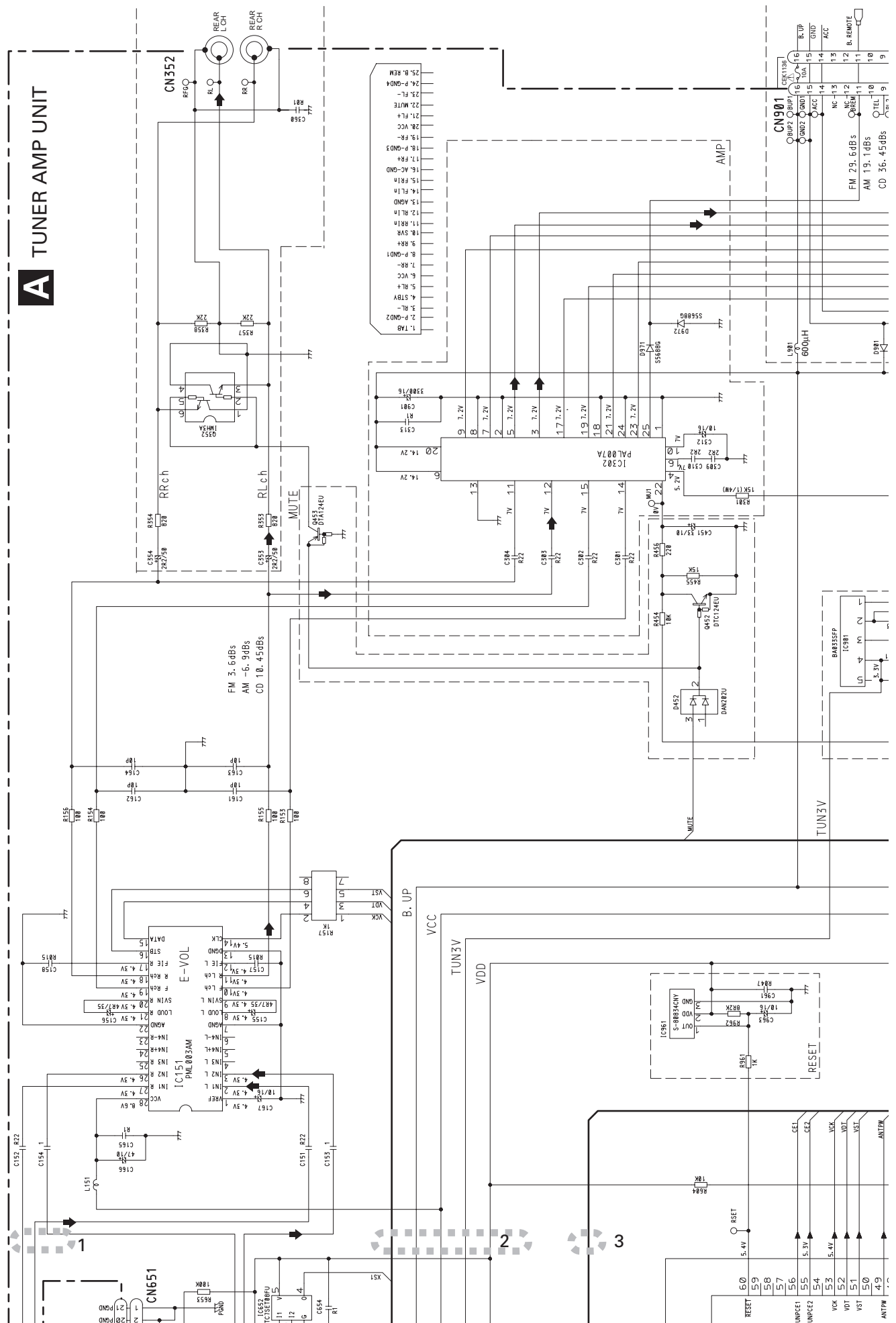
D

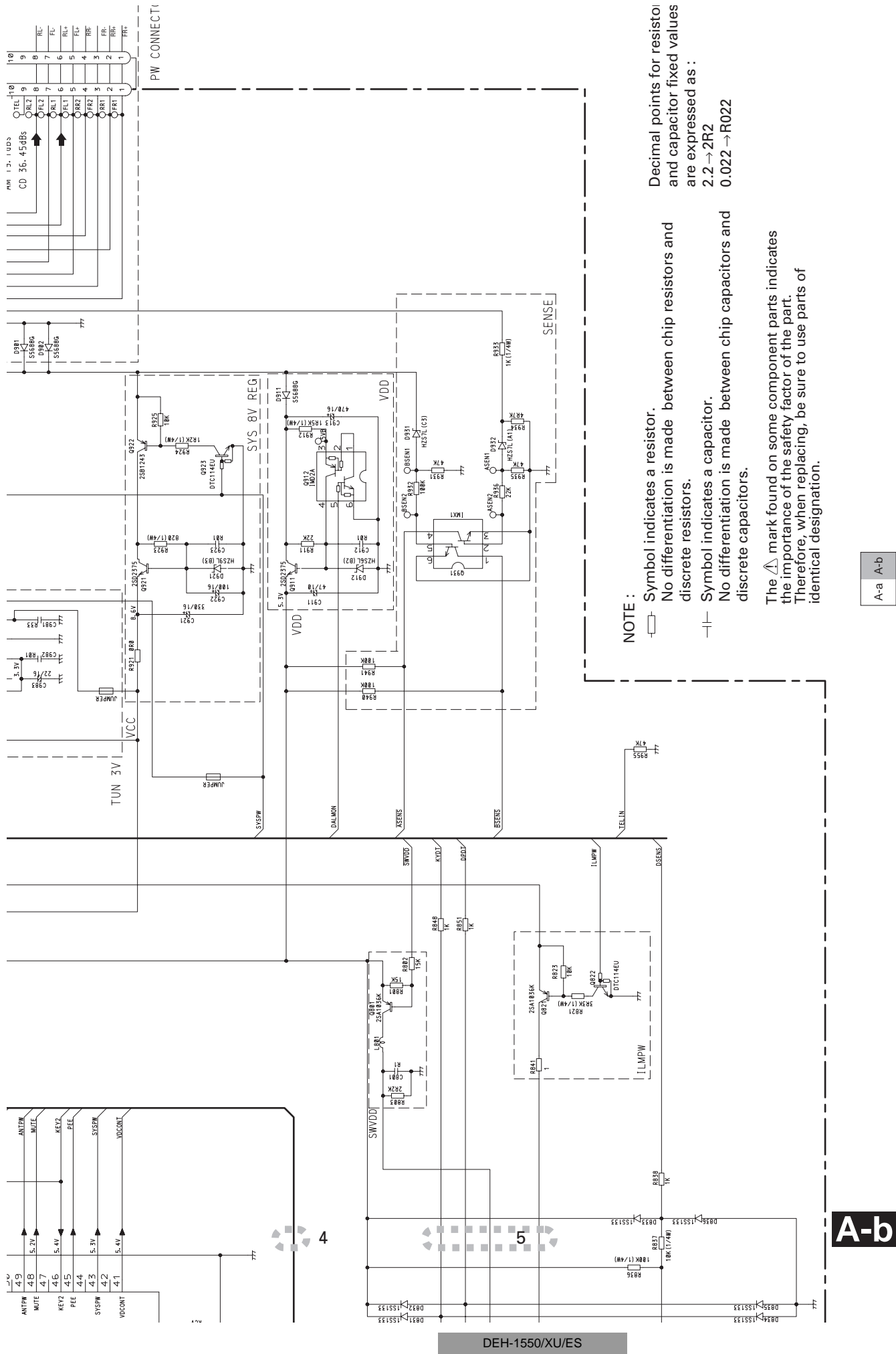
E

F

A-b

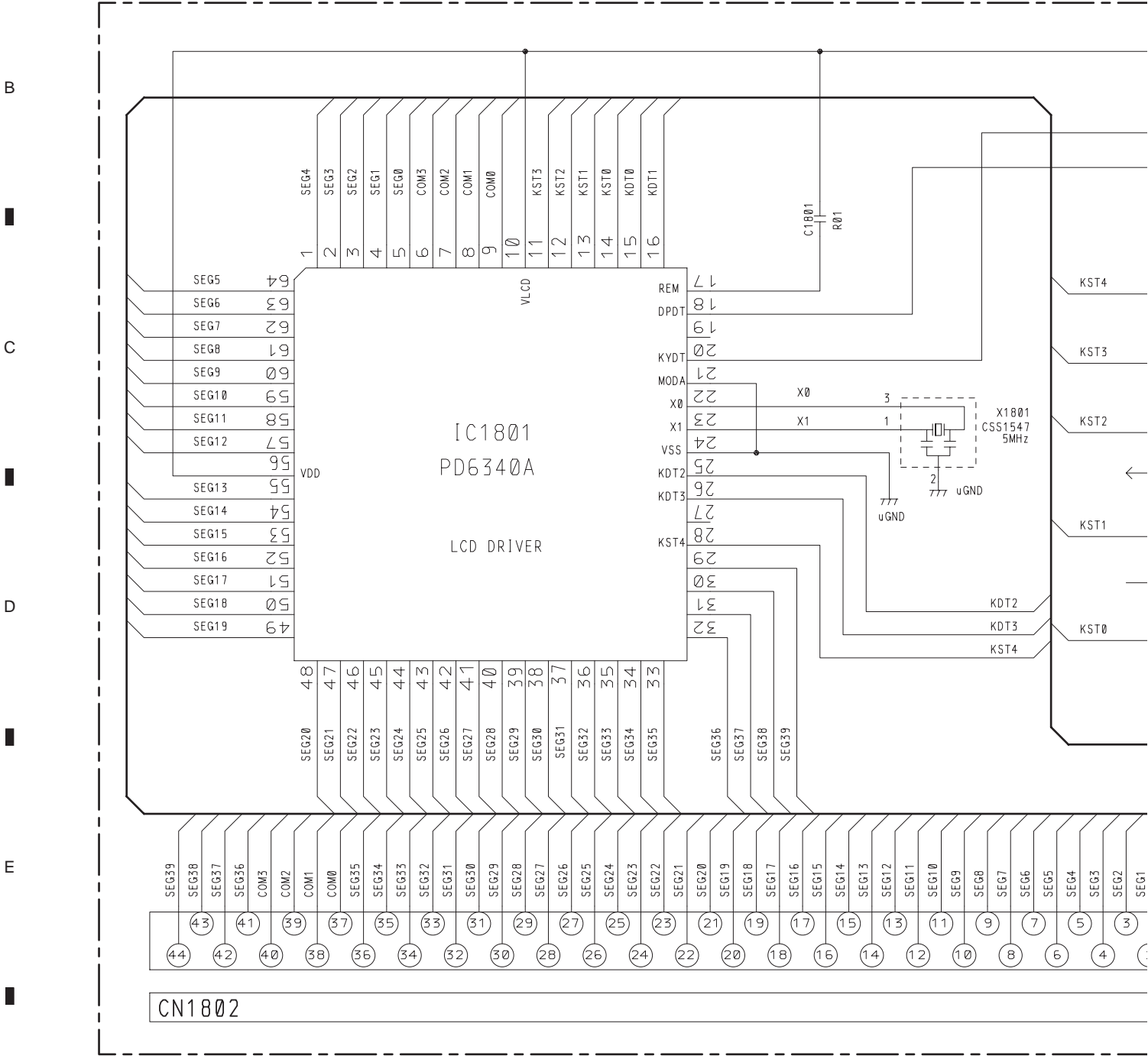
A TUNER AMP UNIT



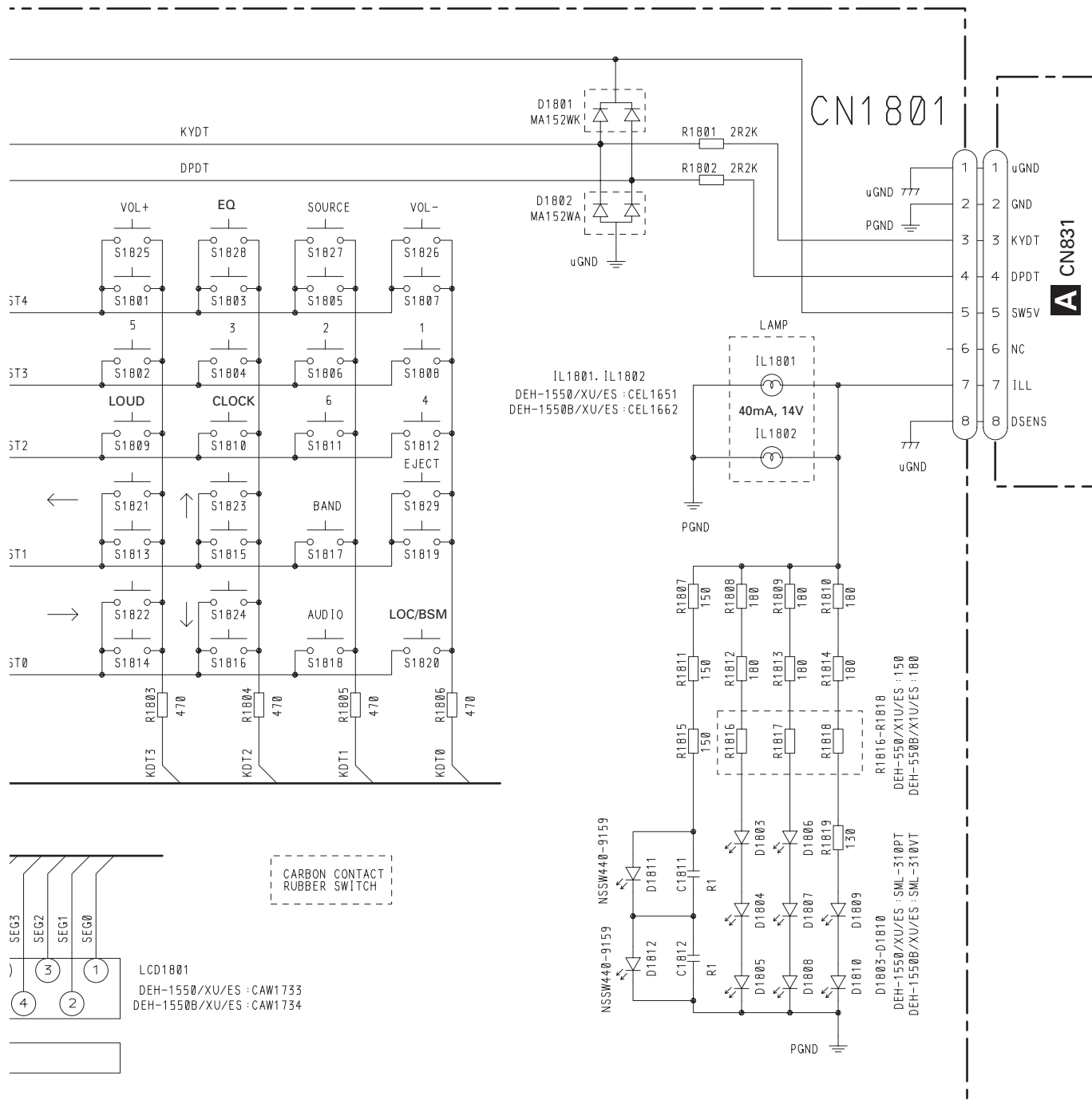


A-b

3.3 KEYBOARD UNIT

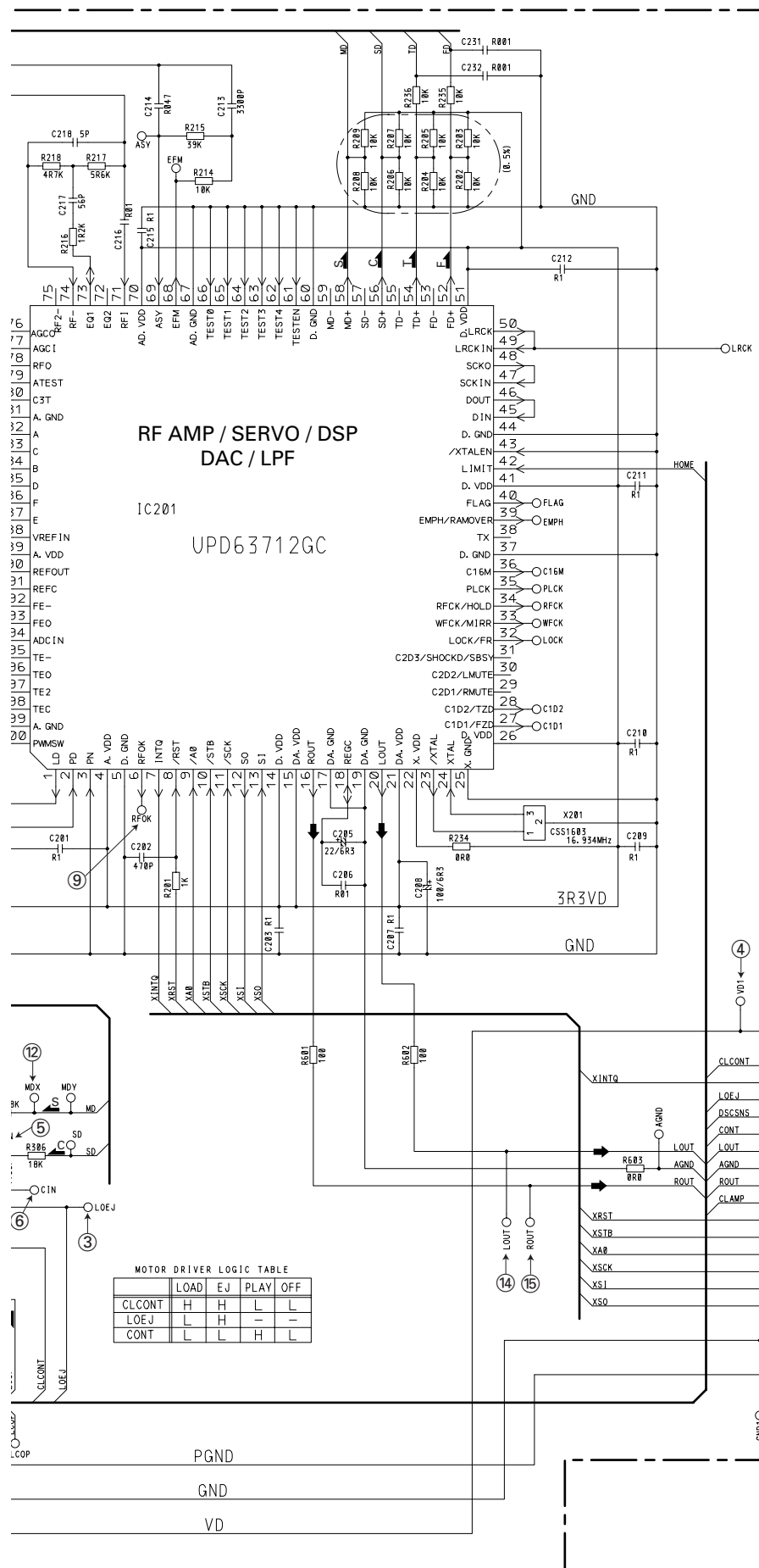


B KEYBOARD UNIT



F





SIGNAL LINE
 FOCUS SERVO LINE
 TRACKING SERVO LINE
 CARRIAGE SERVO LINE
 SPINDLE SERVO LINE

SWITCHES:
 CD CORE UNIT
 S901 : HOME SWITCH.....ON-OFF
 S902 : CLAMP SWITCH.....ON-OFF
 S903 : DSCSNS SWITCH.....ON-OFF
 S904 : 12EJ SWITCH.....ON-OFF
 S905 : 8EJ SWITCH.....ON-OFF
 The underlined indicates the switch position.

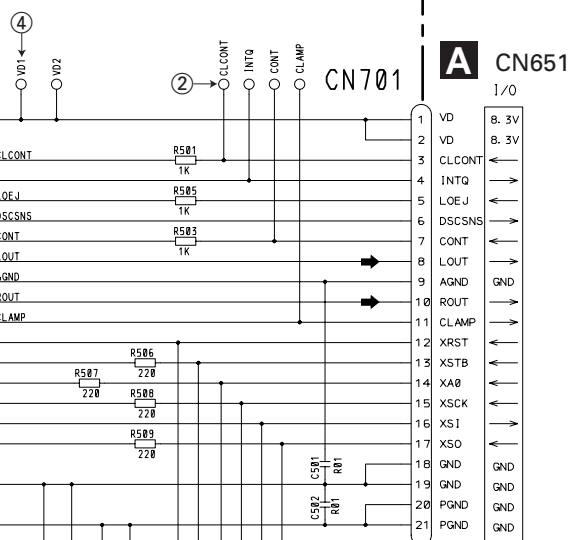
NOTE1)

GND ...CD LSI
 PGND ...Actuator, Motor Driver
 AGND ...Audio

These GND's are not connected to each other on PCB.
 PGND is connected to a floating mechanism part by a screw.

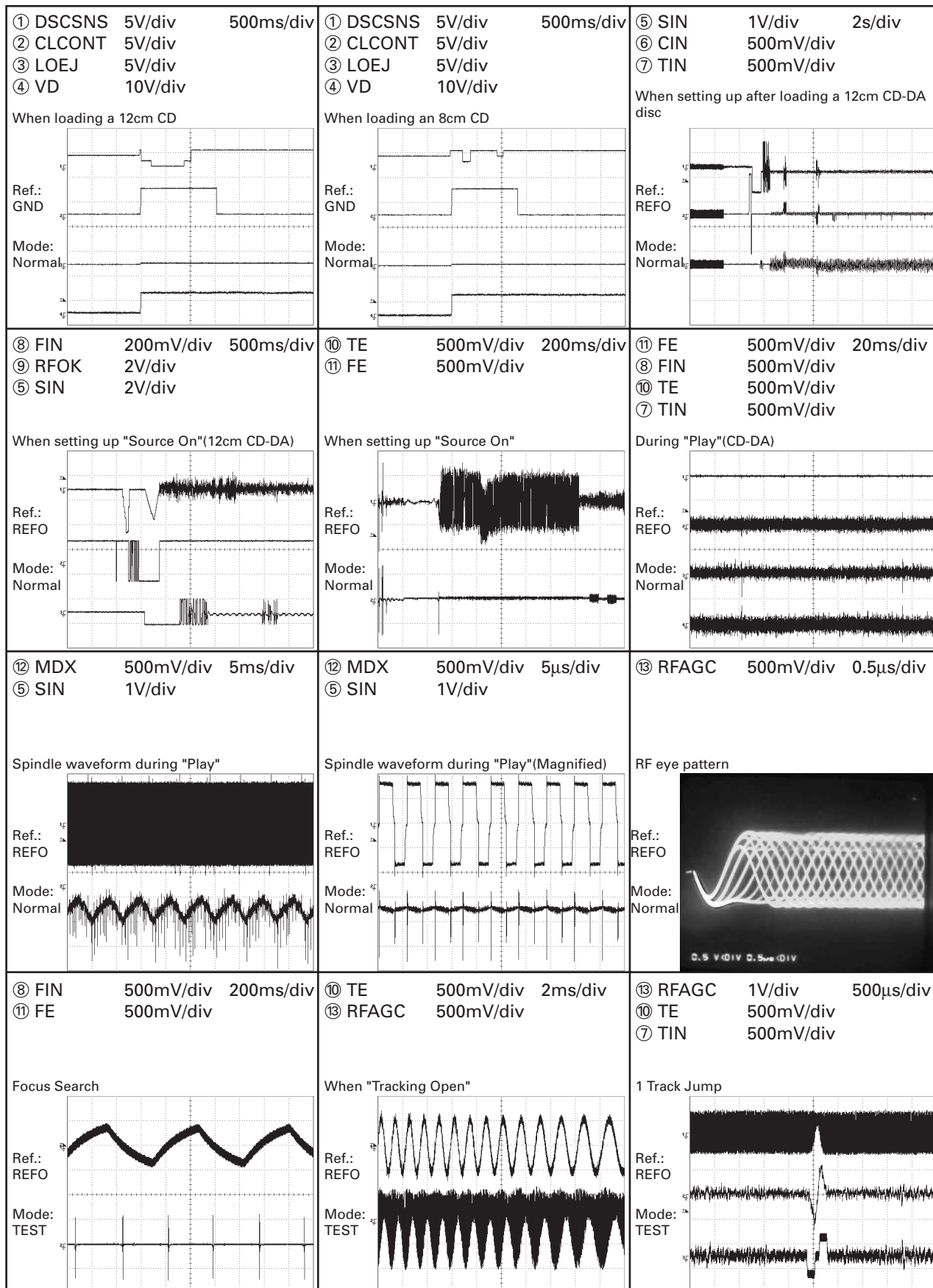
Monitor land (side A)
 Monitor land (side B)
 Land for manual soldering

C CD CORE UNIT (S10)



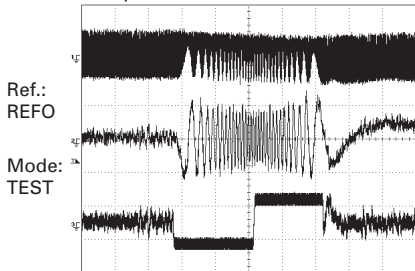
Waveforms

Note : 1. The encircled numbers denote measuring points in the circuit diagram.
2. Reference voltage REFO1(1.65V)



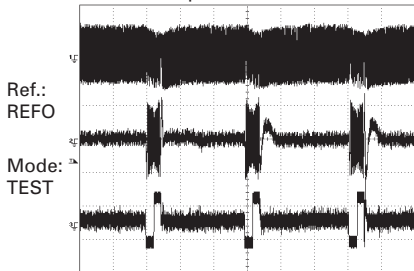
⑬ RFAGC 1V/div 500ms/div
⑩ TE 500mV/div
⑦ TIN 500mV/div

32 Track Jump



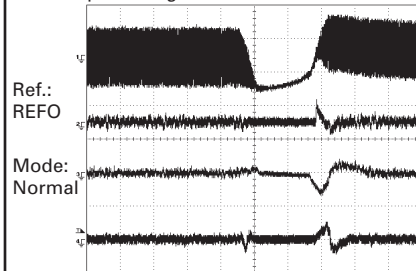
⑬ RFAGC 1V/div 5ms/div
⑩ TE 500mV/div
⑦ TIN 500mV/div

100(32x3) Track Jump



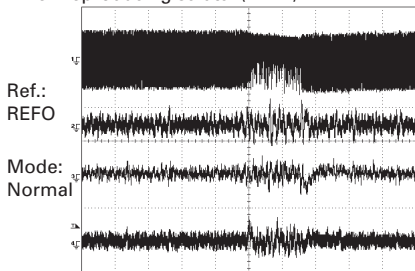
⑬ RFAGC 1V/div 500μs/div
⑦ TIN 1V/div
⑩ TE 1V/div
⑧ FIN 1V/div

When reproducing black dots(1mm)



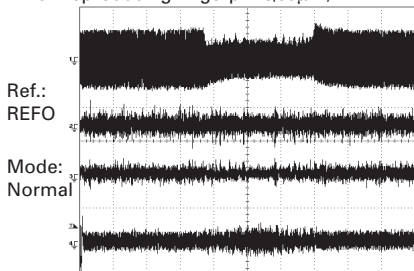
⑬ RFAGC 1V/div 500μs/div
⑩ TE 1V/div
⑥ CIN 500mV/div
⑤ SIN 2V/div

When reproducing scratch(1mm)



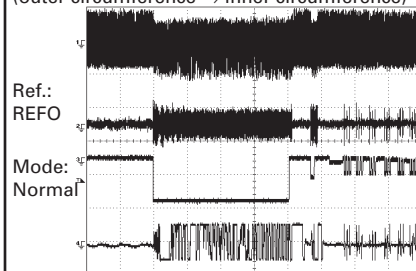
⑬ RFAGC 1V/div 5ms/div
⑩ TE 1V/div
⑥ CIN 500mV/div
⑤ SIN 2V/div

When reproducing fingerprint(65μm)



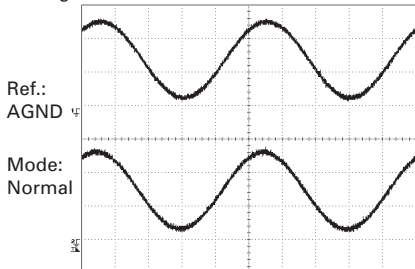
⑬ RFAGC 1V/div 500μs/div
⑩ TE 1V/div
⑥ CIN 500mV/div
⑤ SIN 2V/div

During inside/outside search
(outer circumference → inner circumference)



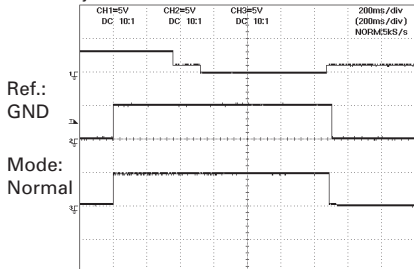
⑭ LOUT 1V/div 200μs/div
⑮ ROUT 1V/div

Analog Audio



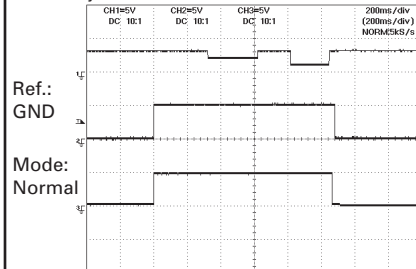
① DSCSNS 5V/div 200ms/div
② CLCONT 5V/div
③ LOEJ 5V/div

When "Eject"(12cm CD)



① DSCSNS 5V/div 200ms/div
② CLCONT 5V/div
③ LOEJ 5V/div

When "Eject"(8cm CD)



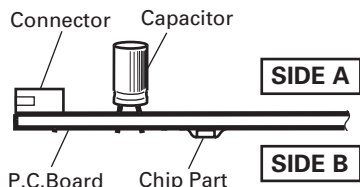
4. PCB CONNECTION DIAGRAM

4.1 TUNER AMP UNIT

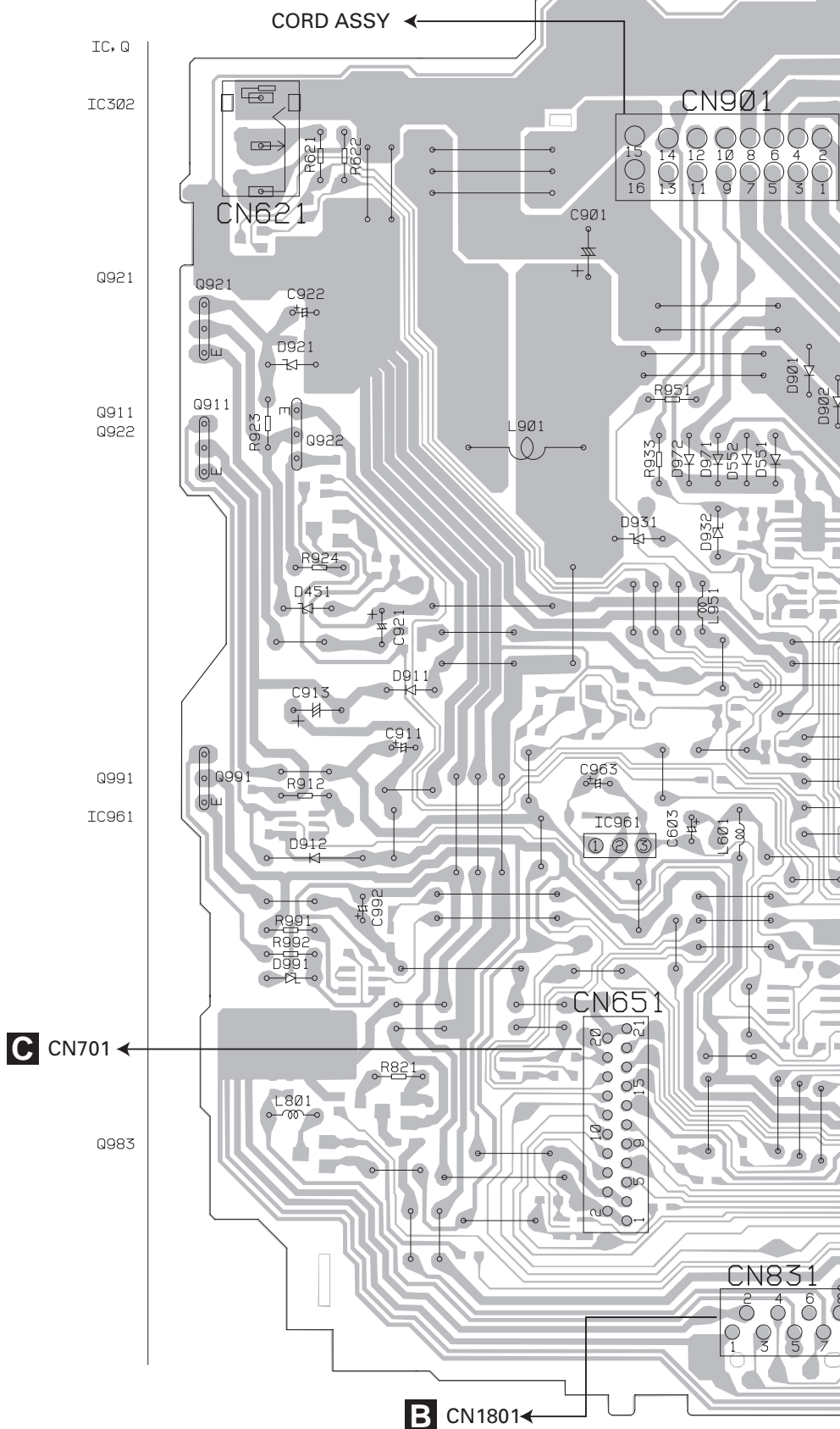
NOTE FOR PCB DIAGRAMS

- 1.The parts mounted on this PCB include all necessary parts for several destination.
- For further information for respective destinations, be sure to check with the schematic diagram.

2.Viewpoint of PCB diagrams

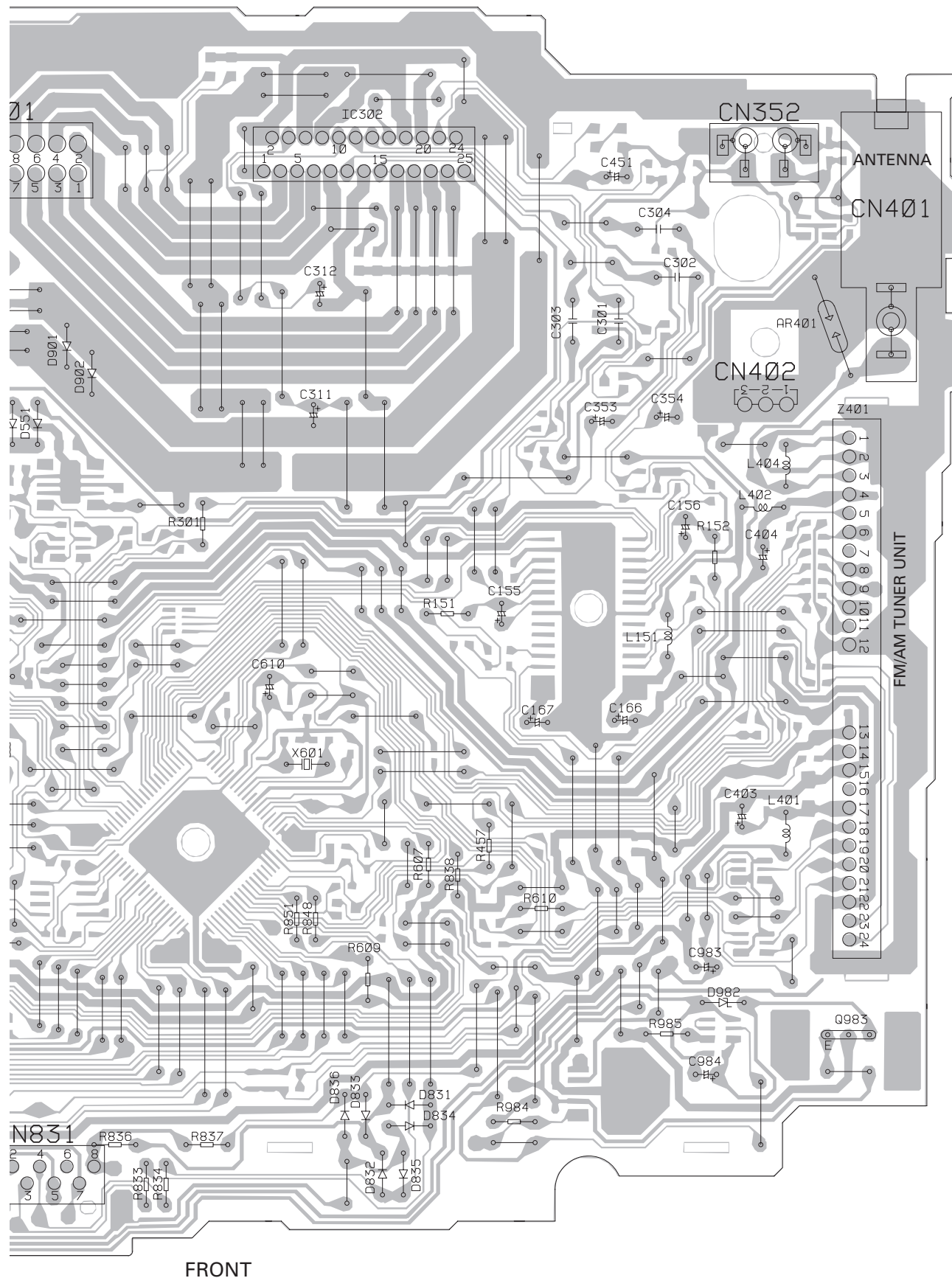


A TUNER AMP UNIT



A

SIDE A



A

A

TUNER AMP UNIT

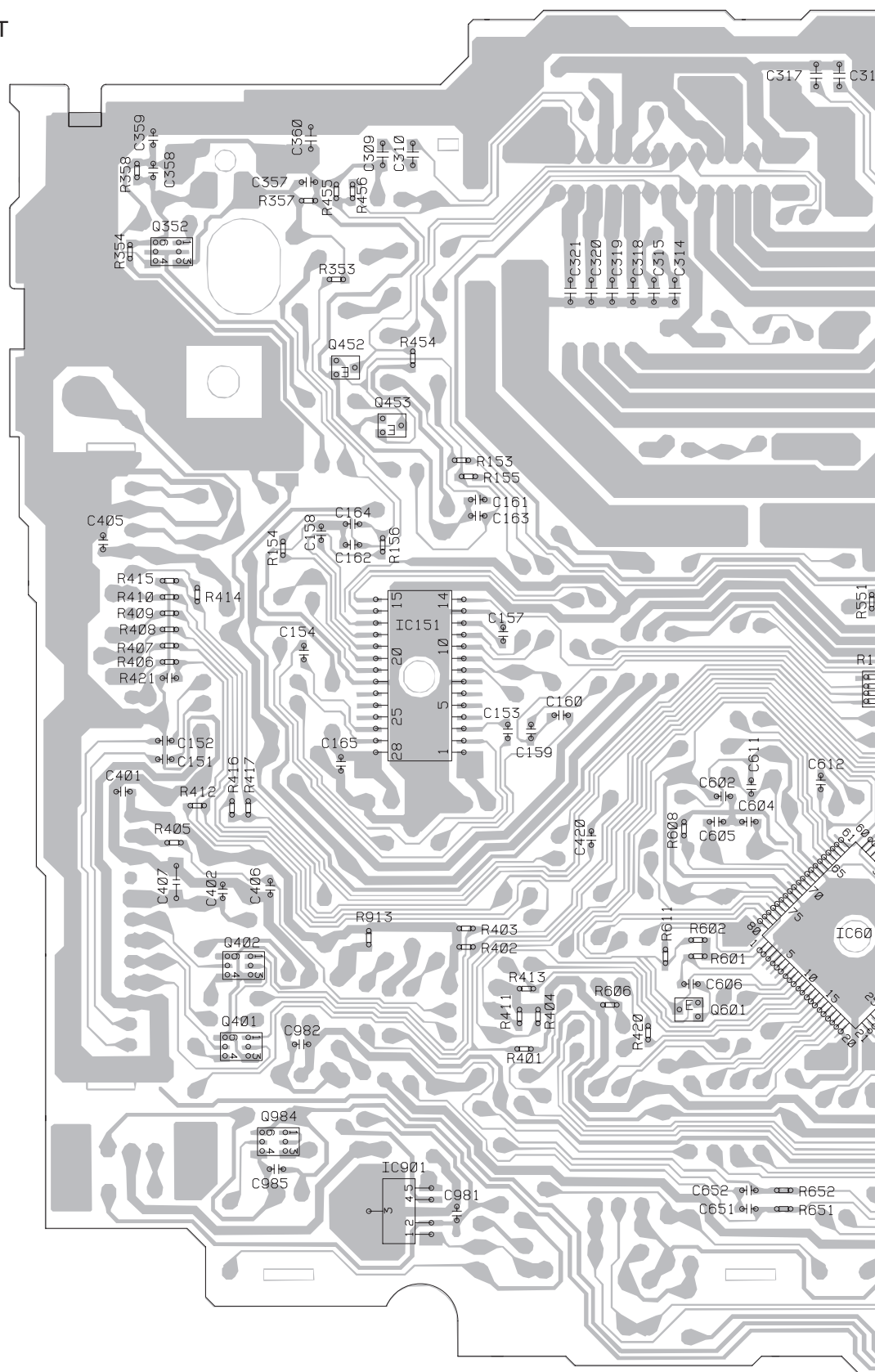
B

C

D

E

F

**A**



5



6



7



8



A



B



C



D



E



F



5



6



7



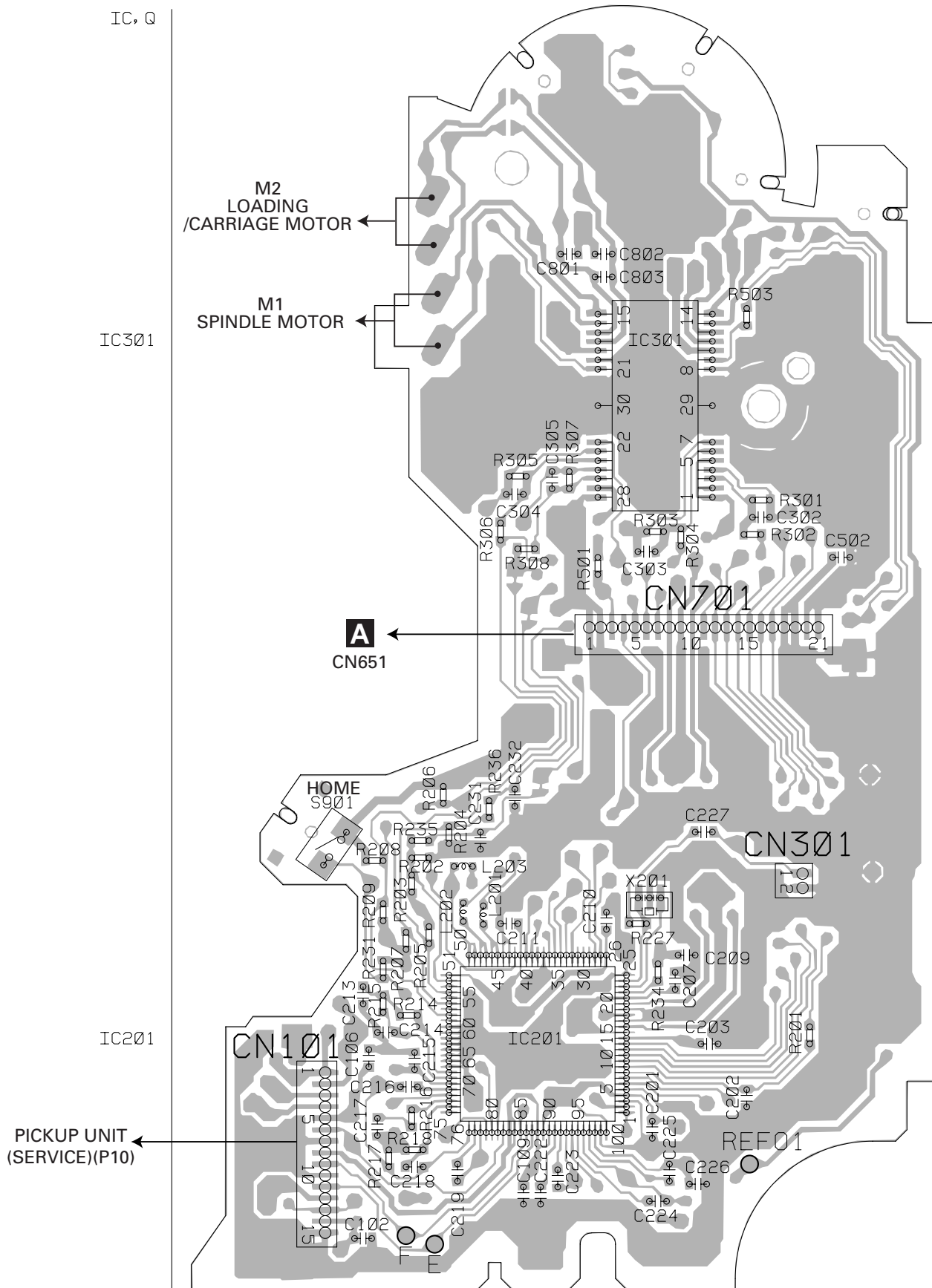
8



4.3 CD MECHANISM MODULE

C CD CORE UNIT(S10)

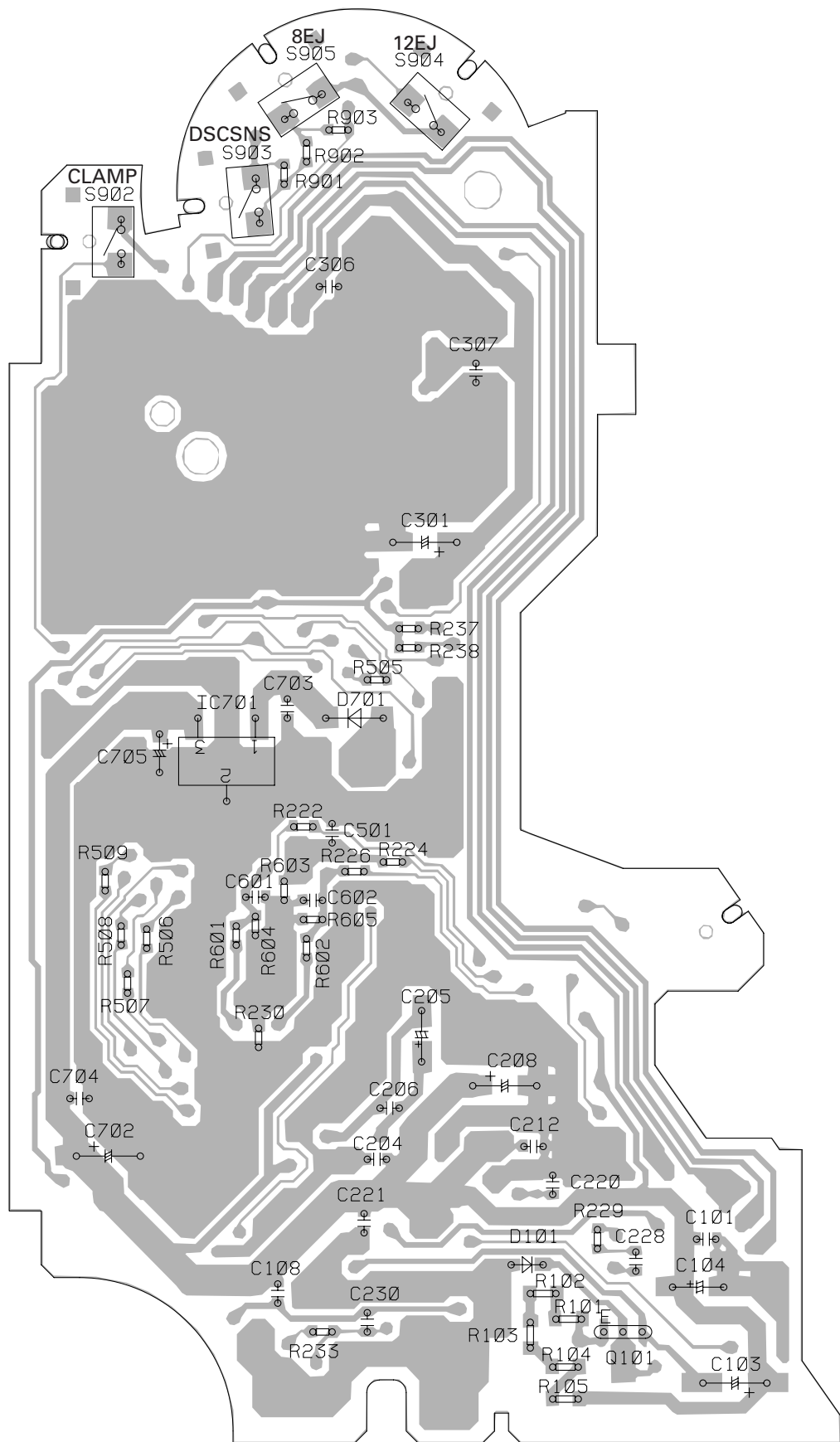
SIDE A



C

30

DEH-1550/XU/ES



IC, Q

IC701

Q101

5. ELECTRICAL PARTS LIST

NOTES:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/OSOOOJ,RS1/OOSOOOJ

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

====Circuit Symbol and No.====Part Name	Part No.	====Circuit Symbol and No.====Part Name	Part No.
A Unit Number : CWM8570(DEH-1550) : CWM8571(DEH-1550B) Unit Name : Tuner Amp Unit		RESISTORS	
MISCELLANEOUS		R 153	RS1/16S101J
IC 151 IC	PML003AM	R 154	RS1/16S101J
IC 302 IC	PAL007A	R 155	RS1/16S101J
IC 601 IC	PE5330A	R 156	RS1/16S101J
IC 652 IC	TC7SET08FU	R 157	RAB4C102J
IC 901 IC	BA033SFP	R 301	RD1/4PU153J
IC 961 IC	S-80834CNY	R 353	RS1/16S821J
Q 352 Transistor	IMH3A	R 354	RS1/16S821J
Q 452 Transistor	DTC124EU	R 357	RS1/16S223J
Q 453 Transistor	DTA124EU	R 358	RS1/16S223J
Q 801 Transistor	2SA1036K	R 405	RS1/16S681J
Q 821 Transistor	2SA1036K	R 407	RS1/16S681J
Q 822 Transistor	DTC114EU	R 408	RS1/16S681J
Q 911 Transistor	2SD2375	R 409	RS1/16S681J
Q 912 Transistor	IMD2A	R 410	RS1/16S681J
Q 921 Transistor	2SD2375	R 414	RS1/16S0R0J
Q 922 Transistor	2SB1243	R 420	RS1/16S681J
Q 923 Transistor	DTC114EU	R 421	RS1/16S473J
Q 931 Transistor	IMX1	R 454	RS1/16S103J
Q 991 Transistor	2SD2375	R 455	RS1/16S153J
Q 992 Transistor	IMD2A	R 456	RS1/16S221J
D 452 Diode	DAN202U	R 457	RD1/4PU681J
D 831 Diode	1SS133	R 601	RS1/16S473J
D 832 Diode	1SS133	R 602	RS1/16S473J
D 833 Diode	1SS133	R 603	RS1/16S103J
D 834 Diode	1SS133	R 604	RS1/16S221J
D 835 Diode	1SS133	R 605	RS1/16S104J
D 836 Diode	1SS133	R 606	RD1/4PU222J
D 901 Diode	S5688G	R 607	RS1/16S0R0J
D 902 Diode	S5688G	R 608	RD1/4PU473J
D 911 Diode	S5688G	R 609	RD1/4PU681J
D 912 Diode	HZS6L(B2)	R 610	RS1/16S473J
D 921 Diode	HZS9L(B3)	R 611	RS1/16S104J
D 931 Diode	HZS7L(C3)	R 653	RS1/16S102J
D 932 Diode	HZS7L(A1)	R 654	RS1/16S221J
D 971 Diode	S5688G	R 801	RS1/16S153J
D 972 Diode	S5688G	R 802	RS1/16S153J
D 991 Diode	HZS9L(B1)	R 803	RS1/16S222J
L 151 Inductor	LAU2R2K	R 821	RD1/4PU332J
L 401 Inductor	LAU1R0K	R 823	RS1/16S103J
L 402 Inductor	LAU1R0K	R 833	RD1/4PU222J
L 404 Ferri-Inductor	LAU4R7K	R 834	RD1/4PU222J
L 601 Inductor	LAU1R0K	R 836	RD1/4PU104J
L 801 Inductor	LAU2R2K	R 837	RD1/4PU103J
L 901 Choke Coil 600μH	CTH1280	R 838	RD1/4PU102J
X 601 Radiator 12.58291MHz	CSS1402	R 841	RS1/16S1R0J
AR 401 Arrester	DSP-201M	R 848	RD1/4PU102J
FM/AM Tuner Unit	CWE1646	R 851	RD1/4PU102J
		R 911	RS1/16S223J
		R 912	RD1/4PU152J

====Circuit Symbol and No.==Part Name

Part No.

R	921	RS1/16S0R0J
R	923	RD1/4PU821J
R	924	RD1/4PU122J
R	925	RS1/16S103J
R	931	RS1/16S473J
R	932	RS1/16S104J
R	933	RD1/4PU102J
R	934	RS1/16S472J
R	935	RS1/16S473J
R	936	RS1/16S223J
R	940	RS1/16S104J
R	941	RS1/16S104J
R	955	RS1/16S473J
R	961	RD1/4PU102J

R	962	RS1/16S822J
R	991	RD1/4PU221J
R	992	RD1/4PU221J
R	993	RS1/16S222J
R	994	RS1/16S472J

CAPACITORS

C	151	CKSRYB224K16
C	152	CKSRYB224K16
C	153	CKSRYB105K10
C	154	CKSRYB105K10
C	155	CEJQ4R7M35
C	156	CEJQ4R7M35
C	157	CKSRYB153K50
C	158	CKSRYB153K50
C	161	CCSRCH100D50
C	162	CCSRCH100D50

C	163	CCSRCH100D50
C	164	CCSRCH100D50
C	165	CKSRYB104K16
C	166	CEJQ470M10
C	167	CEJQ100M16

C	301	CFTNA224J50
C	302	CFTNA224J50
C	303	CFTNA224J50
C	304	CFTNA224J50
C	309	CKSQYB225K10

C	310	CKSQYB225K10
C	312	CEJQ100M16
C	313	CKSRYB104K16
C	353	CEJQ2R2M50
C	354	CEJQ2R2M50

C	360	CKSQYB103K50
C	401	CKSRYB103K50
C	402	CKSRYB103K50
C	403	CEJQ470M6R3
C	404	CEJQ101M10

C	405	CKSRYB103K50
C	420	CCSRCH470J50
C	451	CEJQ330M10
C	601	CKSRYB103K50
C	604	CCSRCH200J50

C	605	CCSRCH200J50
C	610	CEJQ4R7M35
C	611	CKSRYB224K16
C	654	CKSRYB104K16
C	801	CKSRYB104K16

C	901	3300μF/16V
C	911	
C	912	
C	913	470μF/16V
C	921	330μF/16V

C	922	CEJQ101M16
---	-----	------------

====Circuit Symbol and No.==Part Name

Part No.

C	923	CKSRYB103K50
C	961	CKSRYB473K50
C	963	CEJQ100M16
C	981	CKSRYB334K10
C	982	CKSRYB103K50
C	983	CEJQ220M16
C	991	CKSRYB473K50
C	992	CEJQ101M10

B Unit Number : CWM8578(DEH-1550)
 : CWM8579(DEH-1550B)
 Unit Name : Keyboard Unit

MISCELLANEOUS

IC	1801	IC	PD6340A
D	1801	Diode	MA152WK
D	1802	Diode	MA152WA
D1803-10		LED (DEH-1550)	SML-310PT
D1803-10		LED (DEH-1550B)	SML-310VT

D	1811	LED	NSSW440-9159
D	1812	LED	NSSW440-9159
X	1801	Ceramic Resonator 5.00MHz	CSS1547
IL	1801	Lamp 14V 40mA(DEH-1550)	CEL1651
IL	1801	Lamp 14V 40mA(DEH-1550B)	CEL1662

IL	1802	Lamp 14V 40mA(DEH-1550)	CEL1651
IL	1802	Lamp 14V 40mA(DEH-1550B)	CEL1662
LCD1801		LCD(DEH-1550)	CAW1733
LCD1801		LCD(DEH-1550B)	CAW1734

RESISTORS

R	1801	RS1/16S222J
R	1802	RS1/16S222J
R	1803	RS1/16S471J
R	1804	RS1/16S471J
R	1805	RS1/16S471J

R	1806	RS1/16S471J
R	1807	RS1/16S151J
R	1808	RS1/16S181J
R	1809	RS1/16S181J
R	1810	RS1/16S181J

R	1811	RS1/16S151J
R	1812	RS1/16S181J
R	1813	RS1/16S181J
R	1814	RS1/16S181J
R	1815	RS1/16S151J

R	1816	(DEH-1550)	RS1/16S151J
R	1816	(DEH-1550B)	RS1/16S181J
R	1817	(DEH-1550)	RS1/16S151J
R	1817	(DEH-1550B)	RS1/16S181J
R	1818	(DEH-1550)	RS1/16S151J

R	1818	(DEH-1550B)	RS1/16S181J
R	1819		RS1/16S131J

CAPACITORS

C	1801	CKSRYB103K50
C	1811	CKSRYF104Z25
C	1812	CKSRYF104Z25

C Unit Number : CWX2708
 Unit Name : CD Core Unit(S10)

MISCELLANEOUS

IC	201	IC	UPD63712GC
IC	301	IC	BA5996FP
IC	701	IC	NJM2391DL1-33
Q	101	Transistor	2SB1132
D	101	Diode	1SS355

A	====Circuit Symbol and No.====Part Name		Part No.	====Circuit Symbol and No.====Part Name		Part No.
	-----	-----	-----	-----	-----	-----
	D 701	Diode	1SR154-400	C 208	100μF/6.3V	CCH1505
	X 201	Ceramic Resonator 16.934MHz	CSS1603	C 209		CKSRYB104K16
	S 901	Spring Switch(HOME)	CSN1051			
	S 902	Spring Switch(CLAMP)	CSN1051	C 210		CKSRYB104K16
	S 903	Spring Switch(DSCSNS)	CSN1052	C 211		CKSRYB104K16
				C 212		CKSRYB104K16
	S 904	Spring Switch(12EJ)	CSN1051	C 213		CKSRYB332K50
	S 905	Spring Switch(8EJ)	CSN1051	C 214		CKSRYB473K25
	RESISTORS			C 215		CKSRYB104K16
	R 101		RS1/10S1R5J	C 216		CKSRYB103K25
	R 102		RS1/10S1R5J	C 217		CCSRCH560J50
	R 103		RS1/10S1R5J	C 218		CCSRCH5R0C50
	R 104		RS1/10S1R5J	C 219		CKSRYB104K16
	R 105		RS1/10S1R5J			
	R 201		RS1/16S102J	C 220		CKSRYB104K16
	R 202		RS1/16S1002D	C 221		CKSRYB104K16
	R 203		RS1/16S1002D	C 222		CKSRYB103K25
	R 204		RS1/16S1002D	C 223		CCSRCH680J50
	R 205		RS1/16S1002D	C 224		CCSRCH470J50
				C 225		CKSRYB682K50
	R 206		RS1/16S1002D	C 231		CKSRYB102K50
	R 207		RS1/16S1002D	C 232		CKSRYB102K50
	R 208		RS1/16S1002D	C 301	100μF/16V	CCH1504
	R 209		RS1/16S1002D	C 302		CCSRCH221J50
	R 214		RS1/16S103J			
	R 215		RS1/16S393J	C 303		CCSRCH221J50
	R 216		RS1/16S122J	C 304		CKSRYB472K50
	R 217		RS1/16S562J	C 305		CKSRYB103K25
	R 218		RS1/16S472J	C 306		CKSRYB104K16
	R 234		RS1/16S0R0J	C 501		CKSRYB103K25
	R 235		RS1/16S103J	C 502		CKSRYB103K25
	R 236		RS1/16S103J	C 702	100μF/16V	CCH1504
	R 301		RS1/16S183J	C 703		CKSRYB224K16
	R 302		RS1/16S822J	C 704		CKSRYB104K16
	R 303		RS1/16S183J	C 705	10μF/6.3V	CCH1470
				Miscellaneous Parts List		
	R 304		RS1/16S822J		Pickup Unit(Service)(P10)	CXX1641
	R 305		RS1/16S183J	M 1	Motor Unit(SPINDLE)	CXB6007
	R 306		RS1/16S183J	M 2	Motor Unit(LOADING/CARRIAGE)	CXB8933
	R 307		RS1/16S183J			
	R 308		RS1/16S183J			
	R 501		RS1/16S102J			
	R 503		RS1/16S102J			
	R 505		RS1/16S102J			
	R 506		RS1/16S221J			
	R 507		RS1/16S221J			
	R 508		RS1/16S221J			
	R 509		RS1/16S221J			
	R 601		RS1/16S101J			
	R 602		RS1/16S101J			
	R 603		RS1/16S0R0J			
	R 901		RS1/16S104J			
	R 902		RS1/16S473J			
	R 903		RS1/16S273J			
	CAPACITORS					
	C 101		CKSRYB104K16			
	C 102		CKSRYB104K16			
	C 103	100μF/16V	CCH1504			
	C 104	47μF/6.3V	CCH1506			
	C 106		CCSRCH101J50			
	C 108		CKSRYB224K16			
	C 109		CKSRYB224K16			
	C 201		CKSRYB104K16			
	C 202		CKSRYB471K50			
	C 203		CKSRYB104K16			
	C 205	22μF/6.3V	CCH1507			
	C 206		CKSRYB103K25			
	C 207		CKSRYB104K16			

6. ADJUSTMENT

6.1 CD ADJUSTMENT

1) Cautions on adjustments

• In this product the single voltage (3.3V) is used for the regulator. The reference voltage is the REFO1 (1.65V) instead of the GND.

If you should mistakenly short the REFO1 with the GND during adjustment, accurate voltage will not be obtained, and the servo's misoperation will apply excessive shock to the pickup. To avoid such problems:

a. Do not mix up the REFO1 with the GND when connecting the (-) probe of measuring instruments. Especially on an oscilloscope, avoid connecting the (-) probe for CH1 to the GND.

b. In many cases, measuring instruments have the same potential as that for the (-) probe. Be sure to set the measuring instruments to the floating state.

c. If you have mistakenly connected the REFO1 to the GND, turn off the regulator or the power immediately.

• Before mounting and removing filters or leads for adjustment, be sure to turn off the regulator.

• For stable circuit operation, keep the mechanism operating for about one minute or more after the regulator is turned on.

• In the test mode, any software protections will not work. Avoid applying any mechanical or electrical shock to the mechanism during adjustment.

• The RFI and RFO signals with a wide frequency range are easy to oscillate. When observing the signals, insert a resistor of 1k ohms in series.

• The load and eject operation is not guaranteed with the mechanism upside down. If the mechanism is blocked due to mistaken eject operation, reset the product or turn off and on the ACC to restore it.

2) Test mode

This mode is used to adjust the CD mechanism module.

• To enter the test mode.

While pressing the 4 and 6 keys at the same time, reset.

• To exit from the test mode.

Turn off the ACC and back up.

Notes:

a. During ejection, do not press any other keys than the EJECT key until the loaded disc is ejected.

b. If you have pressed the (→) key or (←) key during focus search, turn off the power immediately to protect the actuator from damage caused by the lens stuck.

6.2 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT



• Note :

The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

• Purpose :

To check that the grating is within an acceptable range when the PU unit is changed.

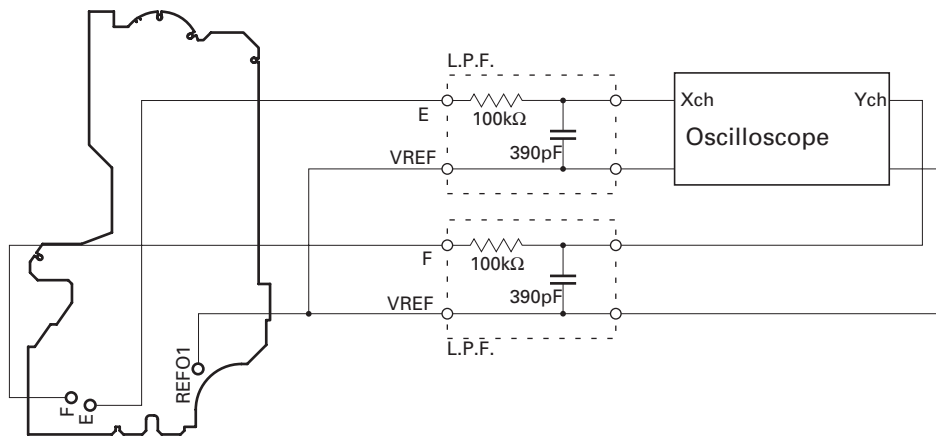
• Symptoms of Mal-adjustment :

If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or taking a long time for track searching.

• Method :

- | | |
|-----------------------|----------------------------|
| • Measuring Equipment | • Oscilloscope, Two L.P.F. |
| • Measuring Points | • E, F, REFO1 |
| • Disc | • ABEX TCD-782 |
| • Mode | • TEST MODE |

CD CORE UNIT(S10)



• Checking Procedure

1. While pressing the 4 and 6 keys at the same time, reset.
2. The display will change, returning to "81" on the fourth press.
3. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
4. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

• Note

Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

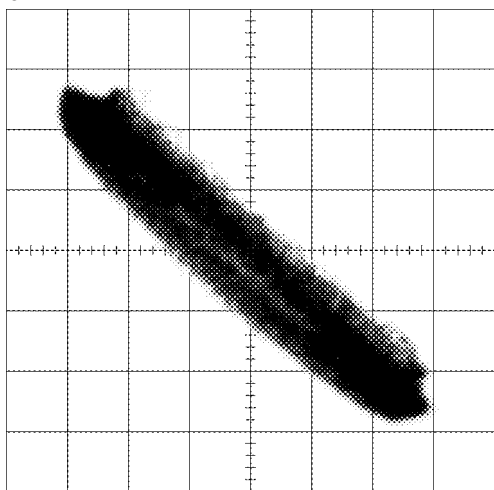
• Hint

Reloading the disc changes the clamp position and may decrease the "wobble".

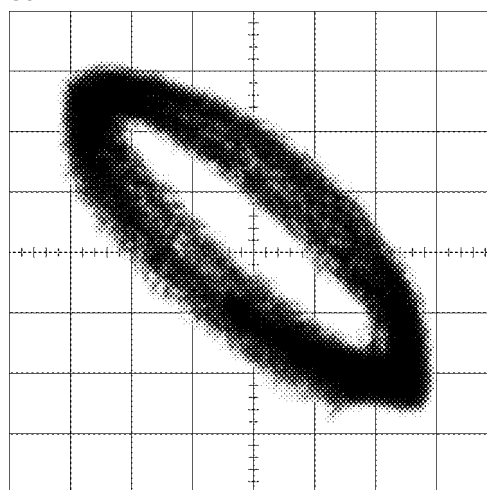
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

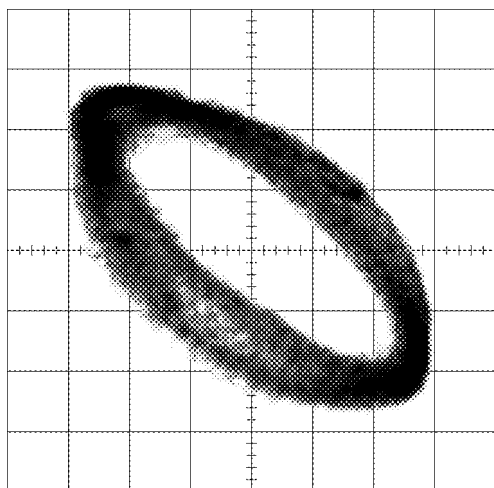
0°



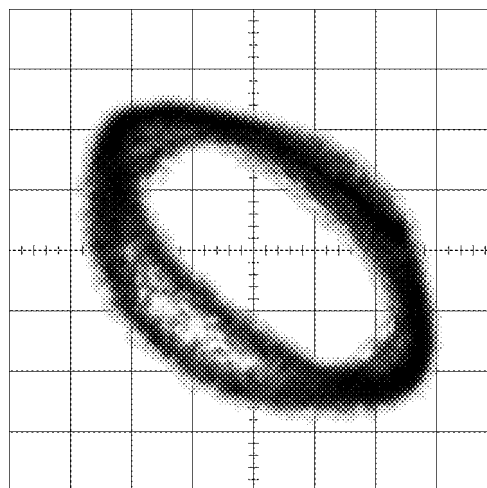
30°



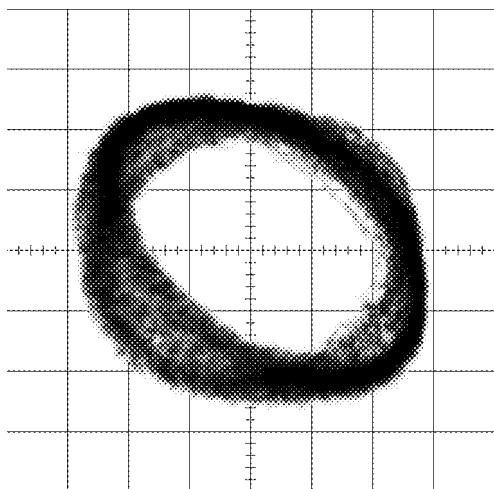
45°



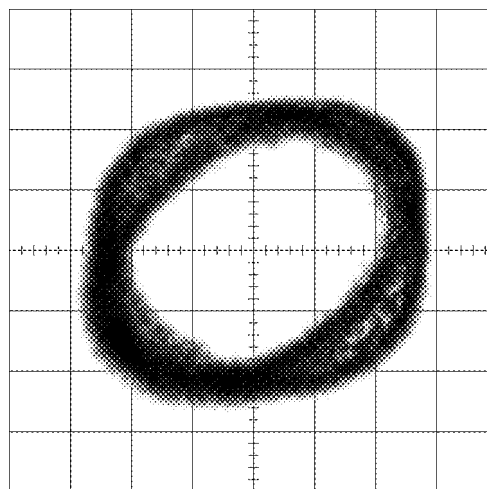
60°



75°



90°



6.3 ERROR MODE

● Error Messages

If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

(1) Basic Indication Method

1) When SERRORM is selected for the CSMOD (CD mode area for the system), error codes are written to DMIN (minutes display area) and DSEC (seconds display area). The same data is written to DMIN and DSEC. DTNO remains in blank as before.

2) Head unit display examples

Depending on display capability of LCD used, display will vary as shown below. xx contains the error number.

8-digit display	6-digit display	4-digit display
ERROR-xx	ERR-xx	E-xx

(2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG SERVO LSI Com- munication Error	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. → Failure on home switch or CRG move mechanism. Communication error between microcomputer and SERVO LSI.
11	Electricity	Focus Servo NG	Focusing not available. → Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG Subcode NG	Spindle not locked. Sub-code is strange (not readable). → Failure on spindle, stains or damages on disc, or excessive vibrations. A disc not containing CD-R data is found. Turned over disc are found, though rarely. CD signal error.
17	Electricity	Setup NG	AGC protection doesn't work. Focus can be easily lost. → Damages or stains on disc, or excessive vibrations on REWRITABLE.
30	Electricity	Search Time Out	Failed to reach target address. → CRG tracking error or damages on disc.
44	Electricity	ALL Skip	Skip setting for all track. (CD-R/RW)
50	Mechanism	CD On Mech Error	Mechanical error during CD ON. → Defective loading motor, mechanical lock and mechanical sensor.
A0	System	Power Supply NG	Power (VD) is ground faulted. → Failure on SW transistor or power supply (failure on connector).

Remarks: Mechanical errors are not displayed (because a CD is turned off in these errors).

Unreadable TOC does not constitute an error. An intended operation continues in this case.

Upper digits of an error code are subdivided as shown below:

1x: Setup relevant errors, 3x: Search relevant errors, Ax: Other errors.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISASSEMBLY

● Removing the Case (not shown)

1. Remove the Case.

● Removing the CD Mechanism Module (Fig.1)

- 1 Remove the four screws.

Disconnect the connector and then remove the CD Mechanism Module.

● Removing the Grille Assy (Fig.1)

- 2 Release the two latches and then remove the Grille Assy.

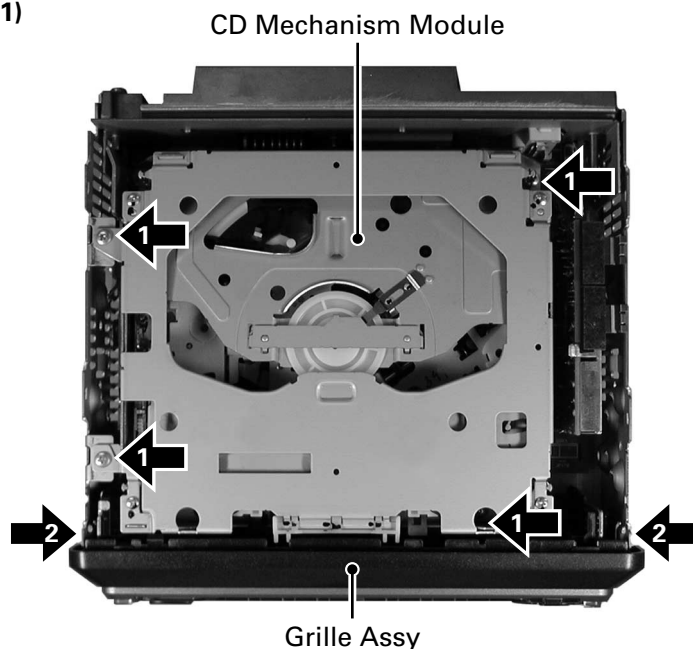


Fig.1

● Removing the Tuner Amp Unit (Fig.2)

- 1 Remove the screw.
- 2 Remove the three screws.
- 3 Straight the tabs at three locations indicated.
- 4 Remove the screw and then remove the Tuner Amp Unit.

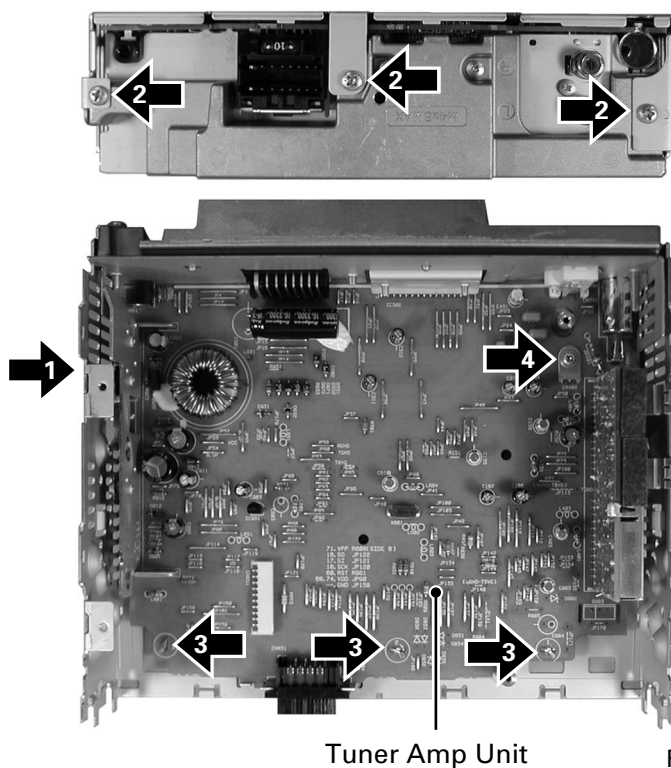


Fig.2

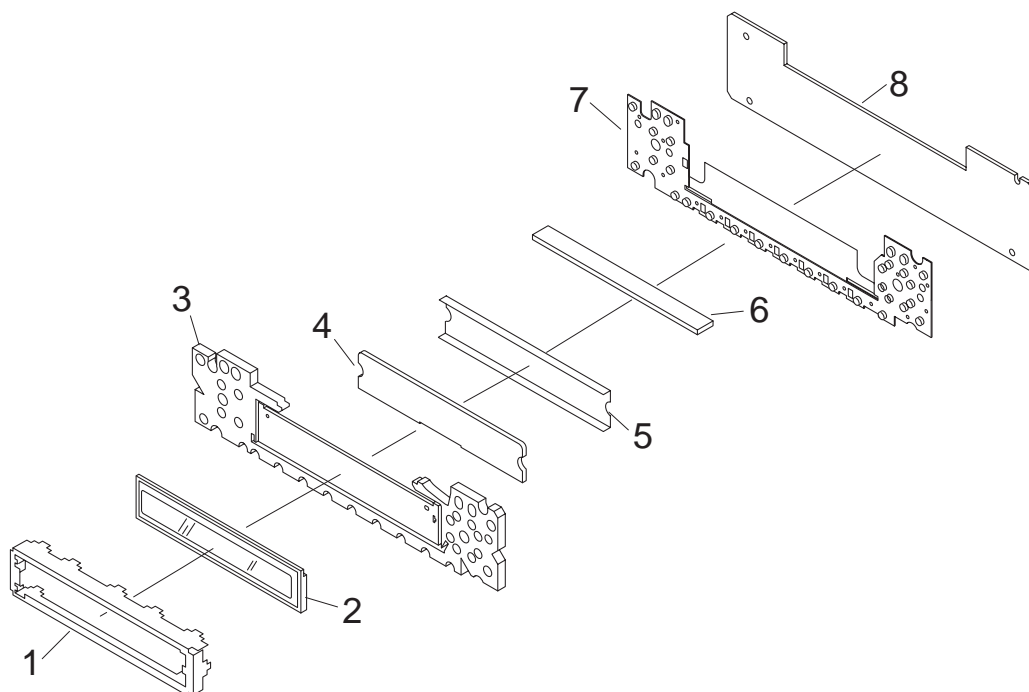
● How to assemble Keyboard Unit

1. Assemble them in order from "1" to "8". (See the figure below.)

2. After that, bend the crows (7 in total) until they get the right angles with the marks printed on "8".

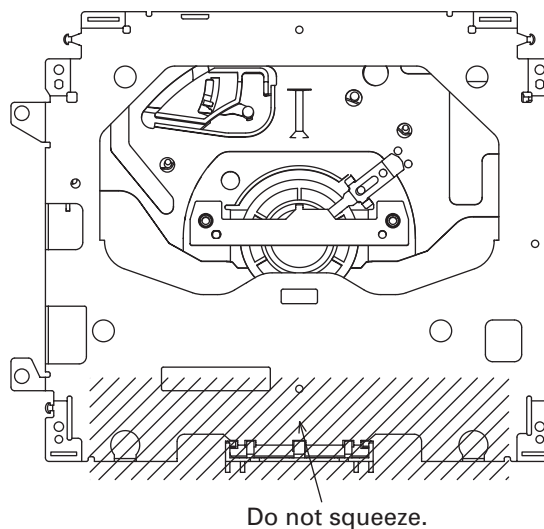
Note) If "5" is not set collectly, defective contact may occur on "6".

To avoid this problem, hold "5" using "7" just before putting "8".



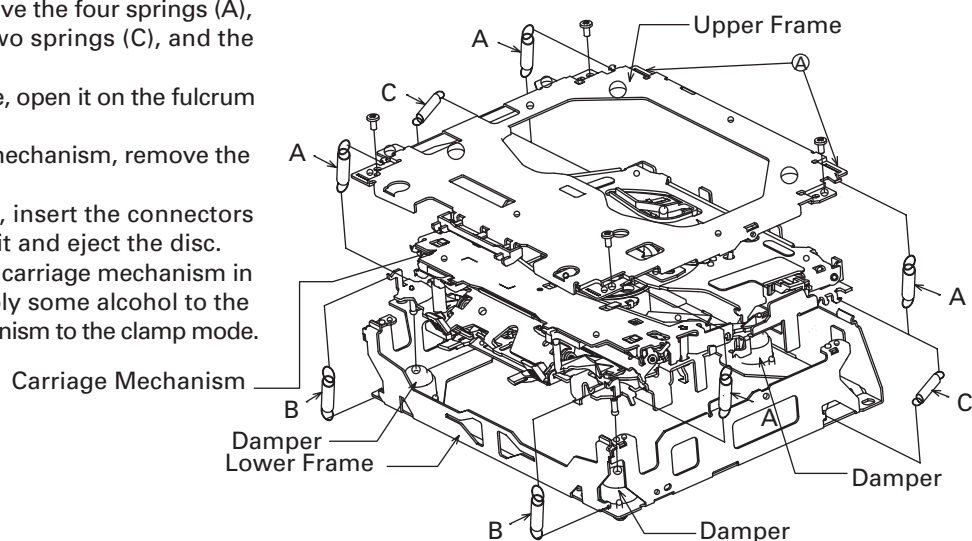
● How to hold the Mechanical Unit

1. Hold the top and bottom frame.
2. Do not squeeze top frame's front portion too tight, because it is fragile.



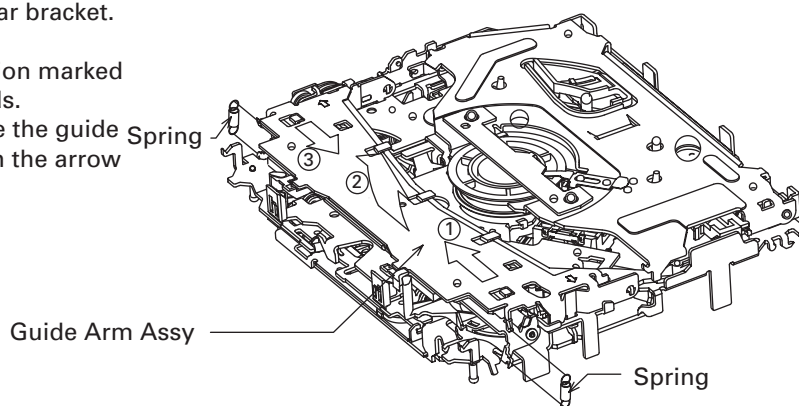
● Removing the Upper and Lower Frames

1. With a disc clamped, remove the four springs (A), the two springs (B), the two springs (C), and the four screws.
 2. To remove the upper frame, open it on the fulcrum A.
 3. While lifting the carriage mechanism, remove the three dampers.
 4. With the frames removed, insert the connectors coming from the main unit and eject the disc.
- Caution: Before installing the carriage mechanism in the frames, be sure to apply some alcohol to the dampers and set the mechanism to the clamp mode.



● Removing the Guide Arm Assy

1. Remove the upper and lower frames and set the mechanism to the clamp mode.
2. Remove the two springs.
3. Remove the two screws and bevel gear bracket. Note that the gears come off.
4. Slide the guide arm Assy in the direction marked with the arrow (1) and open it upwards.
5. At the angle of about 45 degrees, slide the guide arm Assy in the direction marked with the arrow (3) to remove it.



A

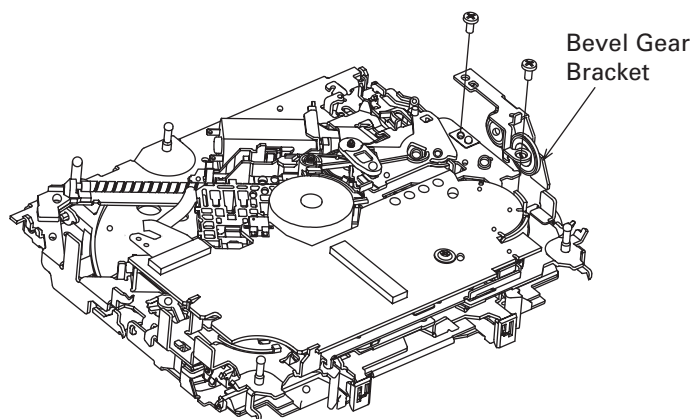
B

C

D

E

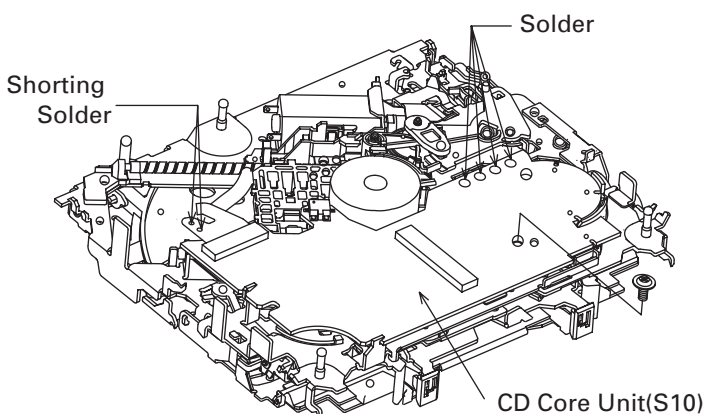
F



● Removing the CD Core Unit(S10)

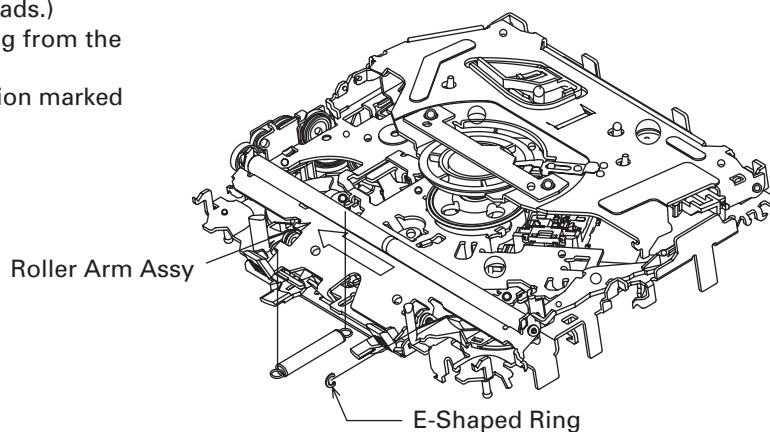
1. Apply shorting solder to the Pickup flexible cable. Disconnect the cable.
2. Remove the solder from the four leads, and loosen the screw.
3. Remove the CD core unit(S10).

Caution: When assembling the CD core unit(S10), set the mechanism to the clamp mode to protect the switches from any damage.



● Removing the Roller Arm Assy

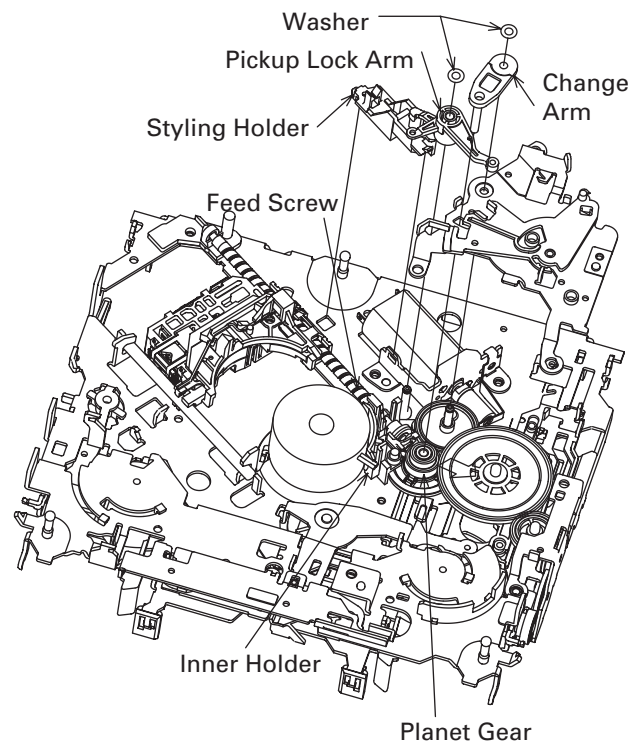
1. Remove the guide arm Assy and set the mechanism to the eject mode.
2. Remove the CD core unit(S10). (You do not have to remove the solder from the four leads.)
3. Remove the spring and E-shaped ring from the fulcrum shaft.
4. Slide the roller arm Assy in the direction marked with an arrow.



● Removing the Pickup Unit

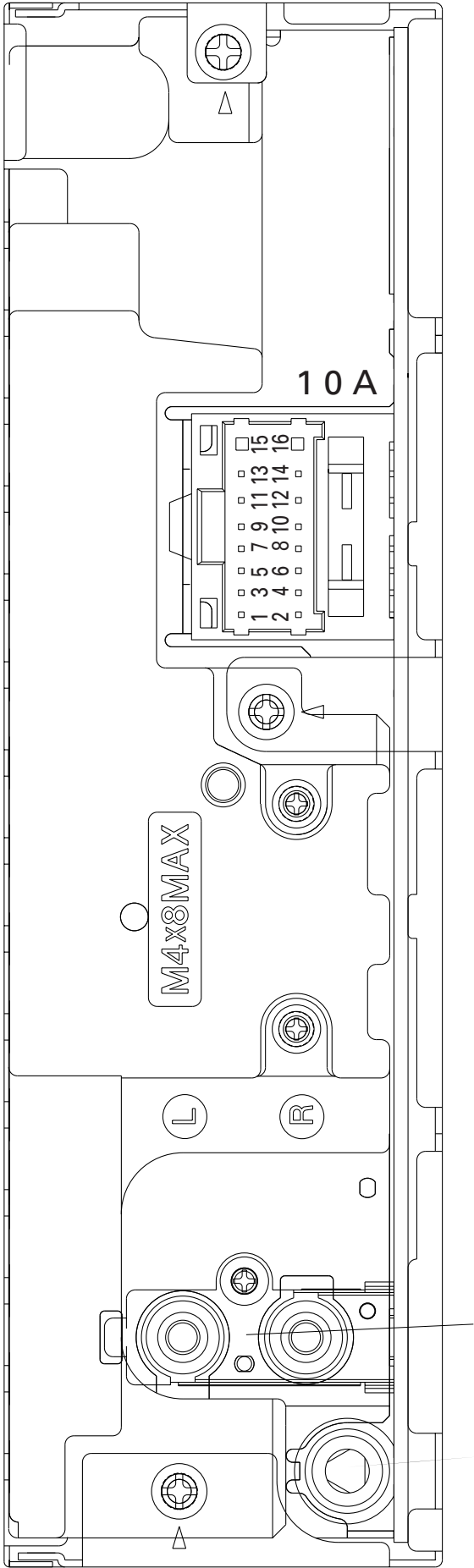
1. Set the mechanism to the clamp mode.
2. Remove the lead wires from the inner holder.
3. Remove the two washers, styling holder, change arm, and pickup lock arm.
4. While releasing from the hook of the inner holder, lift the end of the feed screw.

Caution: In assembling, move the planet gear to the load/eject position before setting the feed screw in the inner holder.



7.1.2 CONNECTOR FUNCTION DESCRIPTION

A
B
C
D
E
F



Pin No.	Pin No.
1	9
2	10
3	11
4	12
5	13
6	14
7	15
8	16

ANTENNA PRE OUT

7.2 PARTS

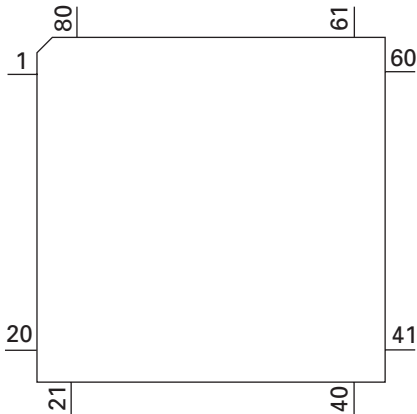
7.2.1 IC

● Pin Functions (PE5330A)

Pin No.	Pin Name	I/O	Function and Operation
1	MODEL1		Model port 1
2,3	NC		Not used
4	AVSS		A/D GND
5,6	NC		Not used
7	AVREF1		A/D converter reference voltage
8	KYDT	I	Key data input
9	DPDT	O	Display data output
10	ADPW	O	A/D converter power supply output
11	TUNPDI	I	PLL IC data input
12	TUNPDO	O	PLL IC data output
13	TUNPCK	O	PLL IC clock output
14	PCL	O	Clock adjustment output
15	TESTIN	I	Test program mode input
16	XSI	I	Serial data input
17	XSO	O	Serial data output
18	XSCK	O	Serial data clock output
19,20	NC		Not used
21	SWVDD	O	Keyboard unit power supply control output
22	ILMPW	O	Illumination power supply control output
23	NC		Not used
24	XRST	O	CD LSI reset output
25	XA0	O	CD LSI identification control signal output
26	XSTB	O	CD LSI strobe output
27	CLAMSW	O	Disc clamp switch output (CD)
28	CONT	O	Servo driver power supply control output
29	LOEJ	O	CD load motor LOAD/EJECT direction exchange output
30	CLCONT	O	Driver input select output
31	NC		Not used
32	DALMON	O	Stand-by output
33	VSS1		GND
34	TELIN	O	Telephone mute output
35-39	NC		Not used
40	RECIEVE		Not used
41	VDCONT	O	VD control output
42	NC		Not used
43	SYSPW	O	System power supply control output
44	NC		Not used
45	PEE	O	Beep tone output
46	KEY2	I	Key data input (Remote control)
47	NC		Not used
48	MUTE	O	System mute output
49	ANTPW	O	Antenna output
50	NC		Not used
51	VST	O	Strobe pulse output for electronic volume
52	VDT	O	Data output for electronic volume
53	VCK	O	Clock output for electronic volume
54	NC		Not used
55	TUNPCE2	O	EEPROM chip enable output 2
56	TUNPCE1	O	EEPROM chip enable output 1
57-59	NC		Not used
60	RESET	I	Reset input
61	LDET	I	PLL lock sense input

Pin No.	Pin Name	I/O	Function and Operation
62	RCK	I	RDS demodulation clock input
63	ASENS	I	ACC sense input
64	BSSENS	I	Back up sense input
65	DSSENS	I	Grille detach sense input
66	INTRQ	I	ATAPI HOST interrupt request input
67	VSS0		GND
68	VDD1		Power supply
69	X2		Crystal oscillator connection pin
70	X1		Crystal oscillator connection pin
71	IC(VPP)		Connect to GND
72	NC		Not used
73	XT1		Connect to GND
74	VDD0		Power supply
75	AVDD		Positive power supply terminal for analog circuit
76	SL	I	SD level input from tuner
77	TEMP		Not used
78	VDSSENS	I	VD power supply voltage sense input
79	DISCSSENS	I	CD DISC sense input
80	STRKEY1		Key data (Remote control)

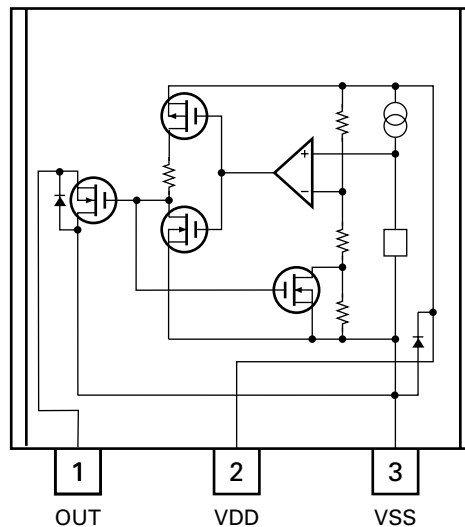
*PE5330A



IC's marked by * are MOS type.

Be careful in handling them because they are very liable to be damaged by electrostatic induction.

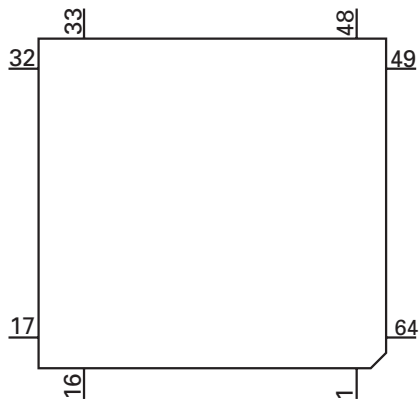
*S-80834CNY



● Pin Functions (PD6340A)

Pin No.	Pin Name	I/O	Function and Operation
1-5	SEG4-0	O	LCD segment output
6-9	COM3-0	O	LCD common output
10	VLCD		LCD drive power supply
11-14	KST3-0	O	Key strobe output
15,16	KDT0,1	I	Key data input (analogue input)
17	REM	I	Remote control reception input
18	DPDT	I	Display data input
19	NC		Not used
20	KYDT	O	Key data output
21	MODA		GND
22	X0		Crystal oscillator connection pin
23	X1		Crystal oscillator connection pin
24	VSS		GND
25,26	KDT2,3	I	Key data input
27	NC		Not used
28	KST4	O	Key strobe output
29-32	NC		Not used
33-55	SEG35-13	O	LCD segment output
56	VDD		Power supply
57-64	SEG12-5	O	LCD segment output

*PD6340A

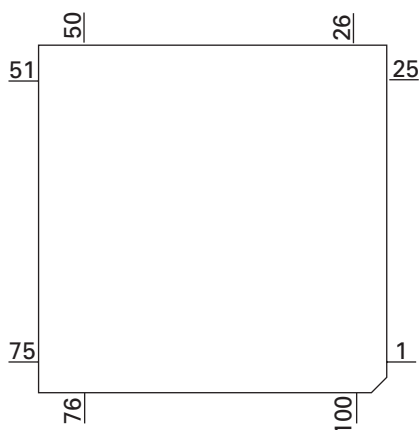


Pin Functions(UPD63712GC)

Pin No.	Pin Name	I/O	Function and Operation
1	LD	O	Output of LD
2	PD	I	Input of PD
3	PN	I	Assignment of pickup polarity
4	AVDD		Power supply for the analog system
5	DGND		Ground for digital circuits
6	RFOK	O	Output of RFOK
7	INTQ	O	Interruption signals to the external microcomputer
8	RST	I	Input of reset
9	A0	I	Command/Parameter discrimination signal input
10	STB	I	Data strobe signal input
11	SCK	I	Serial data clock input
12	SO	O	Serial data output
13	SI	I	Serial data input
14	DVDD		Power supply for digital circuits
15	DAVDD		Power supply for DAC
16	ROUT	O	Output of audio for the right channel
17	DAGND		GND for DAC
18	REGC		Connected to the capacitor for band gap
19	DAGND		GND for DAC
20	LOUT	O	Output of audio for the left channel
21	DAVDD		Power supply for DAC
22	XVDD		Power supply for the crystal oscillator
23	XTAL	O	Connected to the crystal oscillator
24	XTAL	I	Connected to the crystal oscillator
25	XGND		Ground for the crystal oscillator
26	DVDD		Power supply for digital circuits
27	C1D1	O	Information on error correction
28	C1D2	O	Information on error correction
29	C2D1	O	Information on error correction
30	C2D2	O	Information on error correction
31	C2D3	O	Information on error correction
32	LOCK	O	Output of LOCK
33	MIRR	O	MIRR signal
34	HOLD	O	HOLD signal
35	PLCK	O	Output of PLCK
36	C16M	O	Output of 16.9344MHz
37	DGND		Ground for digital circuits
38	TX	O	DAI output
39	EMPH	O	Pre-emphasis information output
40	FLAG	O	The flag for which output sound data cannot be corrected is outputted
41	DVDD		Power supply for digital circuits
42	LIMIT	I	Signal is inputted when the register can be read
43	XTALEN	I	Permission to oscillate
44	DGND		Ground for digital circuits
45	DIN	I	Input of audio data
46	DOUT	O	Output of audio data
47	SCKIN	I	Clock input for audio data
48	SCKO	O	Clock output for audio data
49	LRCKIN	I	Input of LRCK for audio data
50	LRCK	O	Output LRCK for audio data
51	DVDD		Power supply for digital circuits
52	FD+	O	Output of focus drive PWM
53	FD-	O	Output of focus drive PWM
54	TD+	O	Output of tracking drive PWM
55	TD-	O	Output of tracking drive PWM
56	SD+	O	Output of thread drive PWM
57	SD-	O	Output of thread drive PWM
58	MD+	O	Output of spindle drive PWM
59	MD-	O	Output of spindle drive PWM
60	DGND		Ground for digital circuits

Pin No.	Pin Name	I/O	Function and Operation
61	TESTEN	I	Connected to GND
62-66	TEST4-0	I	Connected to GND
67	ADGND		GND for DAC
68	EFM	O	Output of EFM signals
69	ASY	I	Input of asymmetry
70	ADVDD		Power supply for DAC
71	RFI	I	Input of RF
72, 73	EQ2, 1		Equalizer 2, 1
74	RF-	I	Reversal input of RF
75	RF2-	I	Reversal input of RF2
76	AGCO	O	Output of RF
77	AGCI	I	Input of AGC
78	RFO	O	Output of RF
79	ATEST	O	Analog tests
80	C3T		Connection to the capacitor for detecting 3T
81	AGND		Ground for the analog system
82	A	I	Input of A
83	C	I	Input of C
84	B	I	Input of B
85	D	I	Input of D
86	F	I	Input of F
87	E	I	Input of E
88	VREFIN	I	Photo-detector input bias voltage
89	AVDD		Power supply for the analog system
90	REFOUT	O	Output of reference voltage
91	REFC		Connected to the capacitor for output of REFOUT
92	FE-	I	Reversal input of FE
93	FEO	O	Output of FE
94	ADCIN	I	TEST
95	TE-	I	Reversal input of TE
96	TEO	O	Output of TE
97	TE2	O	TE2
98	TEC	I	TEC
99	AGND		Ground for the analog system
100	PWMSW	I	Servo PWM mode switching

* UPD63712GC



A

● Pin Functions(BA5996FP)

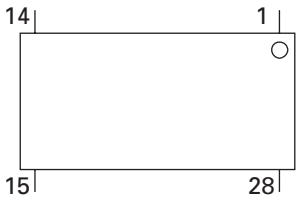
Pin No.	Pin Name	Function and Operation
1	VR	Input pin for reference voltage
2	OPIN2(+)	Input pin for non-inverting input for CH2 preamplifier
3	OPIN2(-)	Input pin for inverting input for CH2 preamplifier
4	OPOUT2	Output pin for CH2 preamplifier
5	OPIN1(+)	Input pin for non-inverting input for CH1 preamplifier
6	OPIN1(-)	Input pin for inverting input from CH1 preamplifier
7	OPOUT1	Output pin for CH1 preamplifier
8	GND	Ground pin
9	MUTE	Mute control pin
10	POWVCC1	Power supply pin for CH1, CH2, and CH3 at "Power" stage
11	VO1(-)	Driver CH1 - Negative output
12	VO1(+)	Driver CH2 - Positive output
13	VO2(-)	Driver CH2 - Negative output
14	VO2(+)	Driver CH2 - Positive output
15	VO3(+)	Driver CH2 - Positive output
16	VO3(-)	Driver CH2 - Negative output
17	VO4(+)	Driver CH4 - Positive output
18	VO4(-)	Driver CH4 - Negative output
19	POWVCC2	Power supply pin for CH4 at "Power" stage
20	GND	Ground pin
21	CNT	Control pin
22	LDIN	Loading input
23	OPOUTSL	Output pin for preamplifier for thread
24	OPINLSL	Input pin for preamplifier for thread
25	OPOUT3	CH3 preamplifier output pin
26	OPIN3(-)	Input pin for inverting input for CH3 preamplifier
27	OPIN3(+)	Input pin for non-inverting input for CH3 preamplifier
28	PREVCC	PreVcc

B

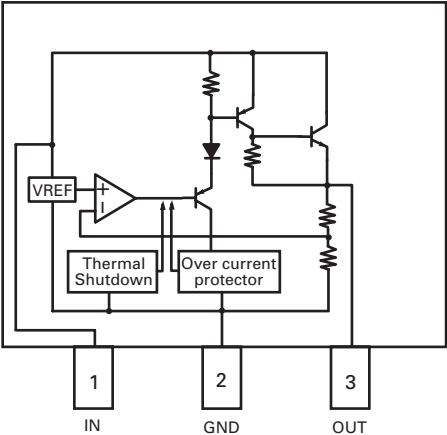
C

BA5996FP

D



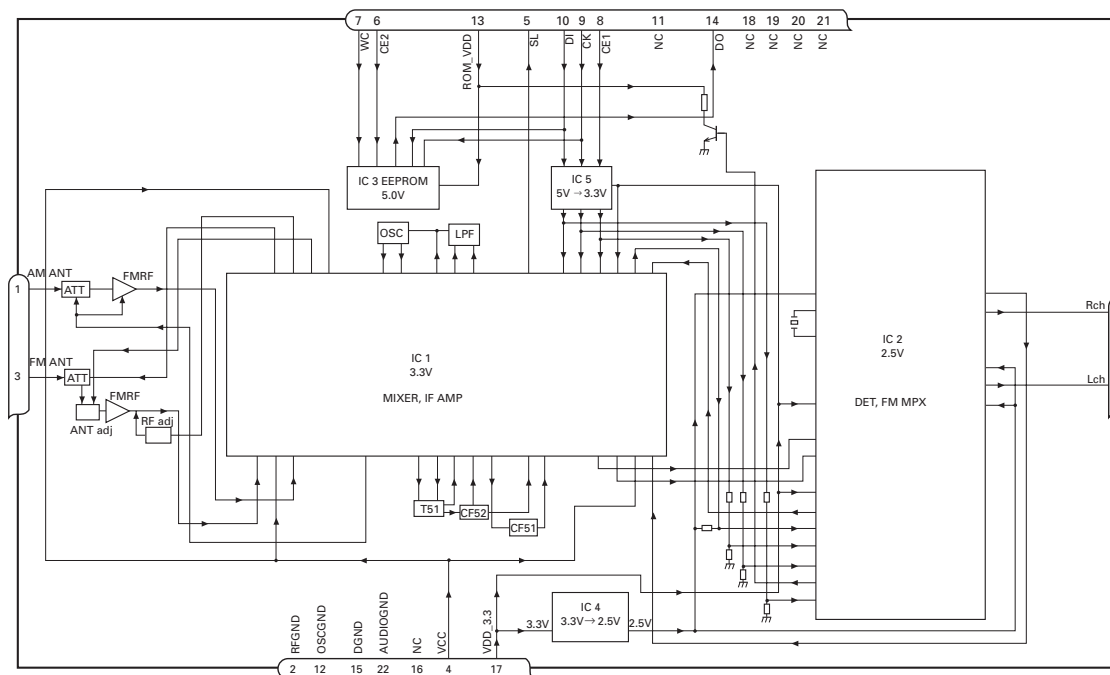
NJM2391DL1-33



E

F

● FM/AM Tuner Unit



No.	Symbol	I/O	Explain	
1	AMANT	I	AM antenna input	AM antenna input high impedance AMANT pin is connected with an all antenna by way of 4.7μH. (LAU type inductor) A series circuit including an inductor and a resistor is connected with RF ground for the countermeasure against the ham of power transmission line.
2	RFGND		RF ground	Ground of antenna block
3	FMANT	I	FM antenna input	Input of FM antenna 75Ω Surge absorber(DSP-201M-S00B) is necessary.
4	VCC		power supply	The power supply for analog block. D.C 8.4V ± 0.3V
5	SL	O	signal level	Output of FM/AM signals level
6	CE2	I	chip enable-2	Chip enable for EEPROM "Low" active
7	WC	I	write control	You can write EEPROM, when EEPROM write control is "Low". Ordinary non connection
8	CE1	I	chip enable-1	Chip enable for AF•RF "High" active
9	CK	I	clock	Clock
10	DI	I	data in	Data input
11	NC		non connection	Not used
12	OSCGND		osc ground	Ground of oscillator block
13	ROM_VDD		power supply	Power supply for EEPROM pin 13 is connected with a power supply of micro computer.
14	DO	O	data out	Data output
15	DGND		digital ground	Ground of digital block
16	NC		non connection	Not used
17	VDD_3.3		power supply	The power supply for digital block. 3.3V ± 0.2V
18	NC		non connection	Not used
19	NC		non connection	Not used
20	NC		non connection	Not used
21	NC		non connection	Not used
22	AUDIOGND		audio ground	Ground of audio block
23	L ch	O	L channel output	FM stereo "L-ch" signal output or AM audio output
24	R ch	O	R channel output	FM stereo "R-ch" signal output or AM audio output

7.2.2 DISPLAY

● LCD(CAW1733,CAW1734)

A

B

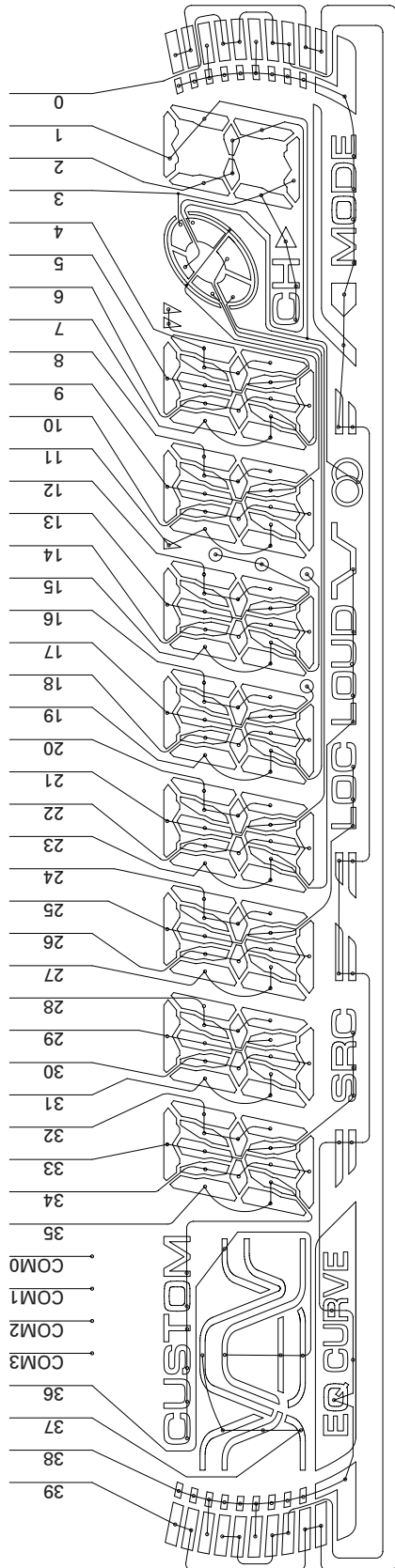
C

D

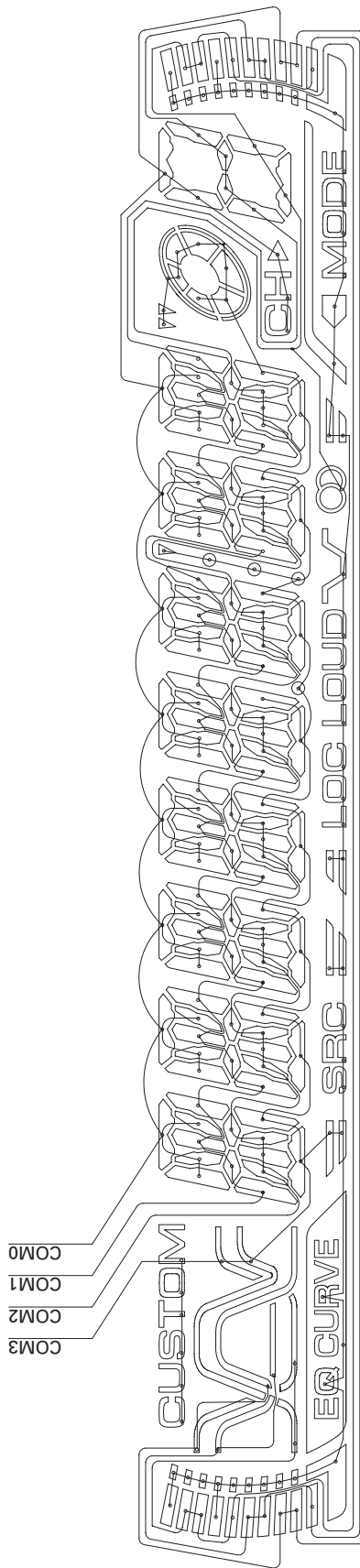
E

F

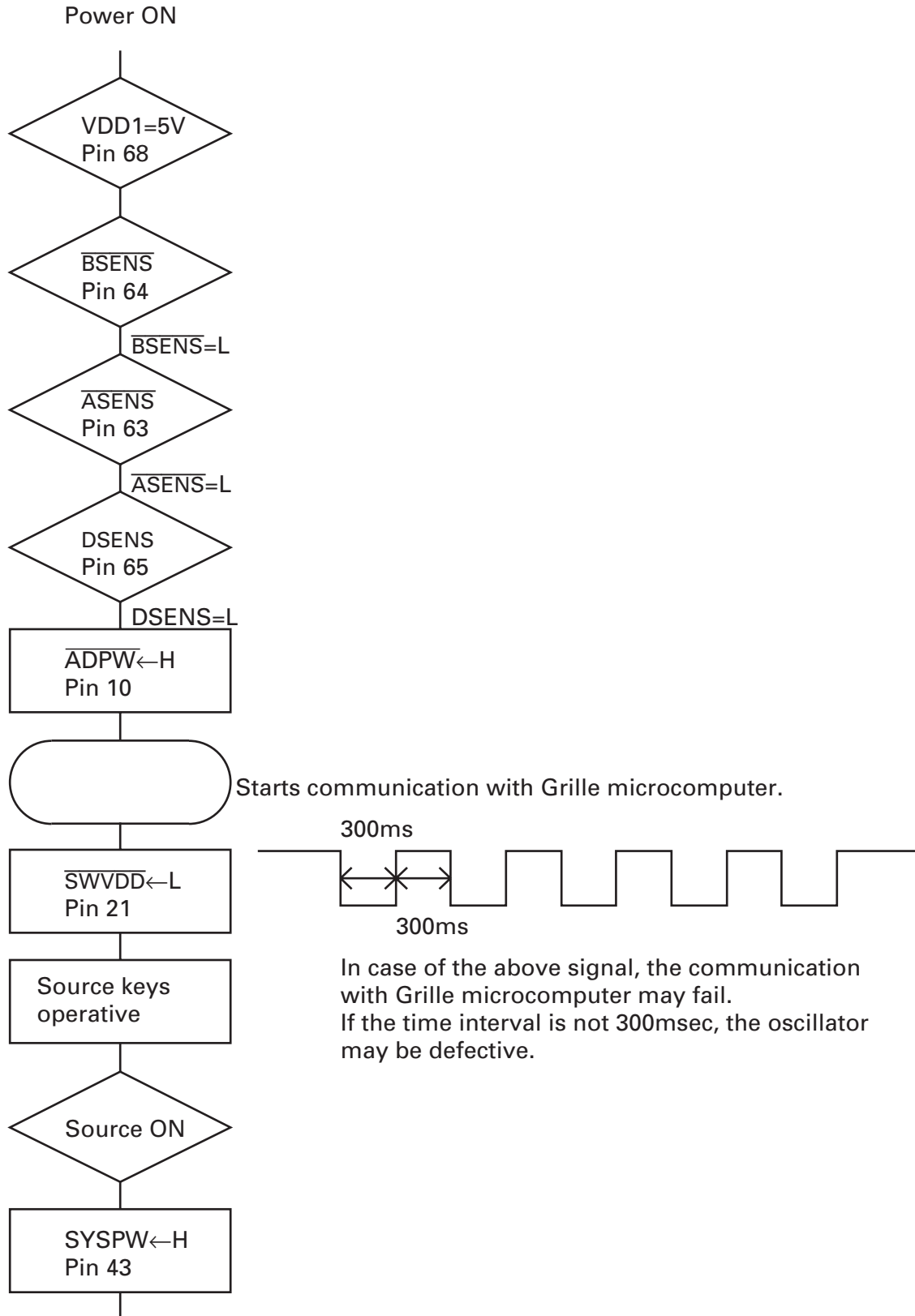
SEGMENT



COMMON



7.3 OPERATIONAL FLOW CHART



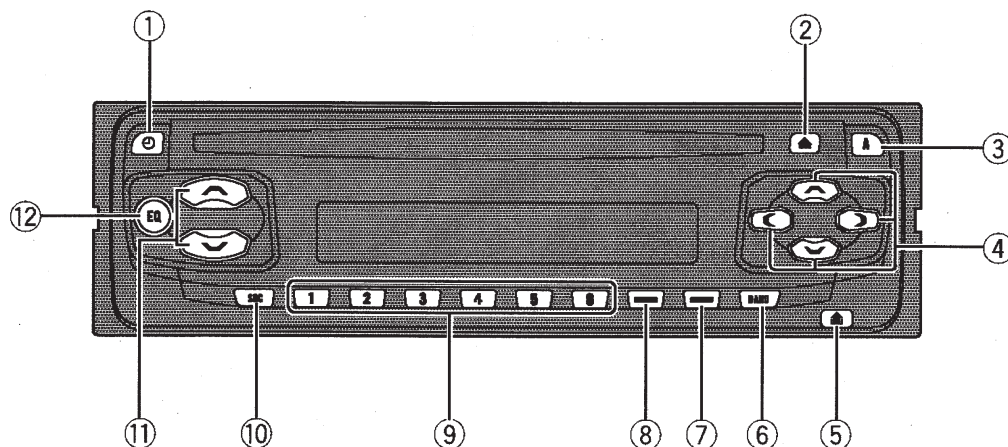
Completes power-on operation.(After that, proceed to each source operation.)

7.4 CLEANING

Before shipping out the product, be sure to clean the following portions by using the prescribed cleaning tools:

Portions to be cleaned	Cleaning tools
CD pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

8. OPERATIONS



Head unit

① **CLOCK button**

Press to change to the clock display.

② **EJECT button**

You can eject a CD by pressing **EJECT**.

③ **AUDIO button**

Press to select various sound quality controls.

④ **▲/▼/◀/▶ buttons**

Press to do manual seek tuning, fast forward, reverse and track search controls. Also used for controlling functions.

⑤ **DETACH button**

Press **DETACH** to release the front panel.

⑥ **BAND button**

Press to select among three FM and one AM bands and cancel the control mode of functions.

⑦ **LOUDNESS button**

Press to turn loudness on or off.

⑧ **LOCAL/BSM button**

Press to turn local function on or off.
Press and hold to turn BSM function on or off.

⑨ **1-6 buttons**

Press for preset tuning.

⑩ **SOURCE button**

This unit is turned on by selecting a source. Press to cycle through all of the available sources.

⑪ **VOLUME**

Press to increase or decrease the volume.

⑫ **EQ button**

Press to select various equalizer curves.

Power ON/OFF

Turning the unit on

- **Press SOURCE to turn the unit on.**
When you select a source the unit is turned on. 


Selecting a source

You can select a source you want to listen to. To switch to the built-in CD player, load a disc in this unit.

- **Press SOURCE to select a source.**
Press **SOURCE** repeatedly to switch between the following sources:
Built-in CD player—Tuner



Notes

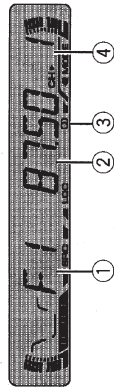
- When no disc has been set in the unit, the source will not switch to the built-in CD player.
- When this unit's blue/white lead is connected to the car's auto-antenna relay control terminal, the car's antenna extends when this unit's source is turned on. To retract the antenna, turn the source off. 

Turning the unit off

- **Press SOURCE and hold until the unit turns off.** 

Tuner

Listening to the radio



Important

If you are using this unit in North, Central or South America, reset the AM tuning step.

① Band indicator

Shows which band the radio is tuned to, AM or FM.

② Frequency indicator

Shows to which frequency the tuner is tuned.

③ Stereo (CD) indicator

Shows that the frequency selected is being broadcast in stereo.

④ Preset number indicator

Shows what preset has been selected.

1 Press SOURCE to select the tuner.

2 Use VOLUME to adjust the sound level.

When you press **VOLUME** up/+, the volume is raised and when pressed down/–, the volume is lowered.

3 Press BAND to select a band.

Press **BAND** until the desired band is displayed, **F1**, **F2**, **F3** for FM or **AM**.

4 To perform manual tuning, press ◀ or ▶ with quick presses.

The frequencies move up or down step by step.

5 To perform seek tuning, press and hold ◀ or ▶ for about one second and release.

The tuner will scan the frequencies until a broadcast strong enough for good reception is found.

- You can cancel seek tuning by pressing either ◀ or ▶ with a quick press.
- If you press and hold ◀ or ▶ you can skip broadcasting stations. Seek tuning starts as soon as you release the buttons.



Note

When the frequency selected is being broadcast in stereo the stereo (CD) indicator will light. 

Storing and recalling broadcast frequencies

If you press any of the preset tuning buttons **1–6** you can easily store up to six broadcast frequencies for later recall with the touch of a button.

- **When you find a frequency that you want to store in memory press a preset tuning button 1–6 and hold until the preset number stops flashing.**

The number you have pressed will flash in the preset number indicator and then remain lit. The selected radio station frequency has been stored in memory.

The next time you press the same preset tuning button **1–6** the radio station frequency is recalled from memory.



Notes

- Up to 18 FM stations, 6 for each of the three FM bands, and 6 AM stations can be stored in memory.

Tuner

- You can also use ▲ and ▼ to recall radio station frequencies assigned to preset tuning buttons **1-6**. □

Tuning in strong signals

Local seek tuning lets you tune in only those radio stations with sufficiently strong signals for good reception.

- Press **LOCAL/BSM** to turn local seek tuning on.
LOCAL appears in the display.
- When you want to return to normal seek tuning, press **LOCAL/BSM** to turn local seek tuning off. □

Storing the strongest broadcast frequencies

BSM (best stations memory) lets you automatically store the six strongest broadcast frequencies under preset tuning buttons **1-6** and once stored there you can tune in to those frequencies with the touch of a button.

- Press **LOCAL/BSM** and hold until the **BSM** turns on.
BSM begins to flash. While **BSM** is flashing the six strongest broadcast frequencies will be stored under preset tuning buttons **1-6** in order of their signal strength. When finished, **BSM** stops flashing.
 - To cancel the storage process, press **LOCAL/BSM**.



Note

Storing broadcast frequencies with **BSM** may replace broadcast frequencies you have saved using **1-6**. □

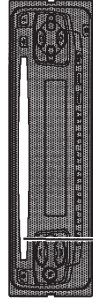
Built-in CD Player

Playing a CD



- Track number indicator**
Shows the track currently playing.
- Play time indicator**
Shows the elapsed playing time of the current track.

- Insert a CD into the CD loading slot.
Playback will automatically start.



CD loading slot

- You can eject a CD by pressing **EJECT**.
- After a CD has been inserted, press **SOURCE** to select the built-in CD player.
- Use **VOLUME** to adjust the sound level.
When you press **VOLUME** up/+, the volume is raised and when pressed down/−, the volume is lowered.
- To perform fast forward or reverse, press and hold ◀ or ▶.
- To skip back or forward to another track, press ◀ or ▶.
Pressing ▶ skips to the start of the next track. Pressing ◀ once skips to the start of the current track. Pressing again will skip to the previous track.



Notes

- The built-in CD player plays one, standard, 12-cm or 8-cm (single) CD at a time. Do not use an adapter when playing 8-cm CDs.
- Do not insert anything other than a CD into the CD loading slot.
- If you cannot insert a disc completely or if after you insert a disc the disc does not play, check that the label side of the disc is up. Press **EJECT** to eject the disc, and check the disc for damage before inserting the disc again.
- If the built-in CD player does not operate properly, an error message such as **ERROR-11** may be displayed. Refer to *Understanding built-in CD player error messages*. □

Playing tracks in a random order

Random play lets you play back tracks on the CD in a random order.

- Press **4** to turn random play on.
RDM appears in the display. Tracks will play in a random order.
- Press **4** to turn random play off.
Tracks will continue to play in order. □

Repeating play

Repeat play lets you hear the same track over again.

- Press **5** to turn repeat play on.
RPT appears in the display. The track currently playing will play and then repeat.

A

B

C

D

E

F

Built-in CD Player

- 2 Press 5 to turn repeat play off.
The track currently playing will continue to play and then play the next track.
- Note
If you perform track search or fast forward/reverse, repeat play is automatically cancelled.

Pausing CD playback

- Pause lets you temporarily stop playback of the CD.
- 1 Press 6 to turn pause on.
PAUSE appears in the display. Play of the current track pauses.
 - 2 Press 6 to turn pause off.
Play will resume at the same point that you turned pause on.

